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REPORTS

OF THE

MOSELY

EDUCATIONAL COMMISSION

TO THE

UNITED STATES OF AMERICA,

OCTOBER-DECEMBER, 1903.

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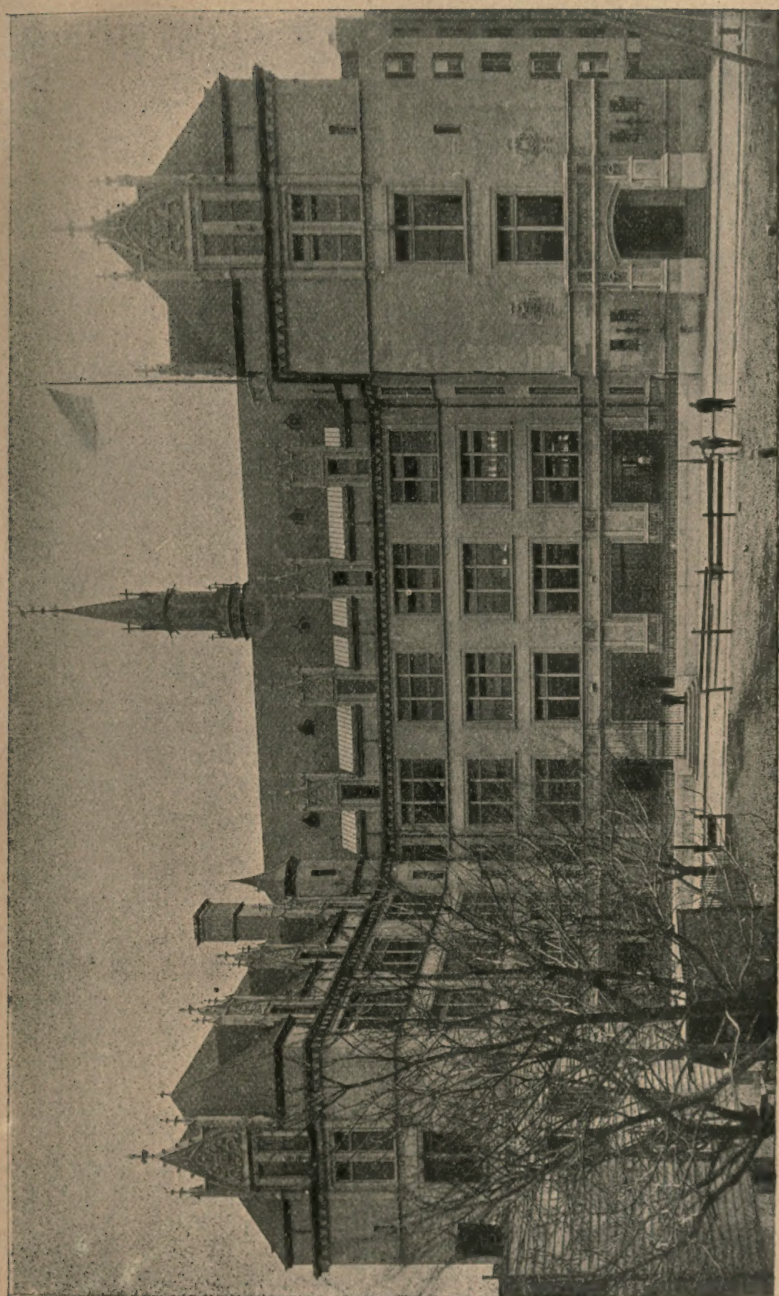
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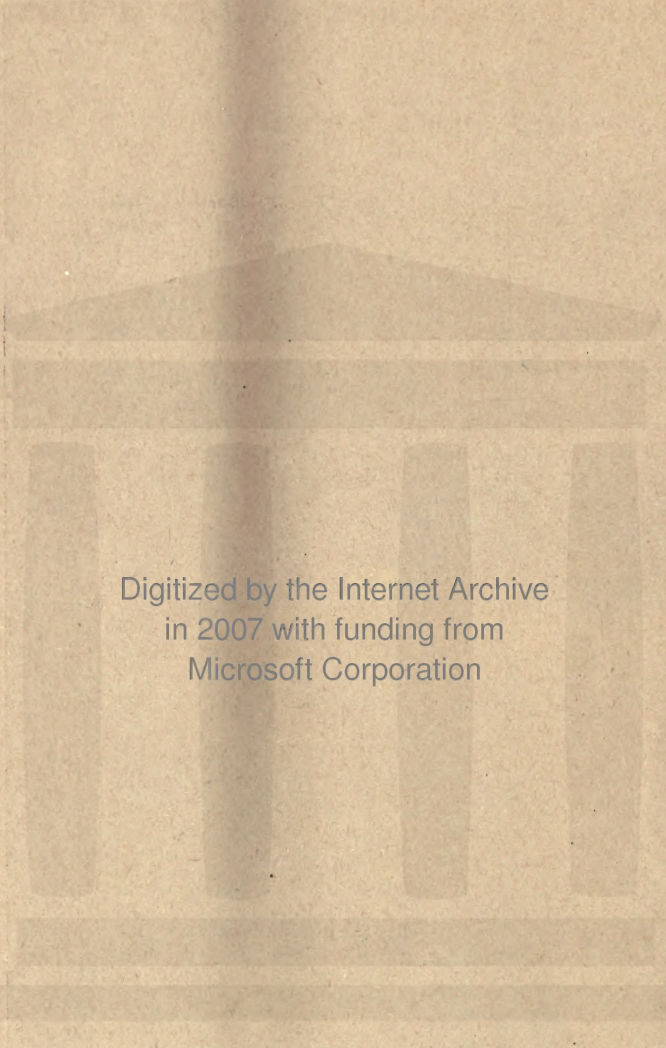
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1904.



A TYPICAL MODERN NEW YORK SCHOOL.



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Mosely Educational Commission

... TO THE ...

United States of America, October-December, 1903.

HELP FROM THE BOARD OF EDUCATION.

When I conceived the idea of taking out an Educational Commission to the United States, I approached Lord Reay, the Chairman of the London School Board, and explained the objects I had in view. To my request that he would help me in the task I had undertaken he readily consented, and further gave me an introduction to Mr. Michael E. Sadler, who in turn promised me every assistance in his power. Subsequently Lord Reay presided at a meeting of prominent educationalists convened in London to advise me concerning the subjects for inquiry and the selection of delegates, and I now wish to thank all those who were present at that meeting for their suggestions and advice, which proved of great assistance in settling the details of the Commission. The Duke of Devonshire, then President of the Board of Education, in an interview I had with him, expressed his sympathy with my project; and Mr. Arthur Balfour, to whom I had obtained an introduction through the courtesy of Mr. Gerald Balfour, President of the Board of Trade (to whose department I was greatly indebted in connection with my Industrial Commission), also showed himself interested in my plan and wished me success. To all those who so kindly helped me I desire to tender my thanks—in particular to Lord Reay, who spared no trouble in giving me the benefit of his advice, and to Mr. Sadler, whose knowledge and good offices were always at my disposal and who also devoted much of his own time to work on my account. I have also to acknowledge my obligations to Mr. P. J. Hartog (now Academic Registrar to the University of London), who rendered valuable assistance as Organising Secretary, and to express my thanks to Professor Armstrong, who kindly undertook to write the summary of the reports, and to the Rev. A. W. Jephson, for services rendered to the Commission. Finally, it remains for me to thank the various gentlemen who did me the honour to accept my invitation, and to say how zealous they were in their work and with what strong determination they set about obtaining all possible facts and data, often at the expense of foregoing pleasure and even rest.

The new Education Act opens the field for some really useful work to be achieved by a Commission containing, like the present one, representatives of all branches of education. The Act has been worked out on lines somewhat similar to those followed in the United States. In that country each State makes its own rules and regulations with regard to education, and has the right of levying taxes to cover the expenses incurred. The new Act gives similar powers, within certain specified limits, to the County Councils, and it now remains for those bodies and the public at large to decide

what shape public education shall take in the future, what money shall be spent, and how it shall be administered. I venture, therefore, to think that my Commission comes at a very opportune moment, and should largely help to mould public opinion in regard to points upon which it needs enlightenment.

The delegation arrived at New York on the morning of Saturday, 10th October. At a meeting held the same evening, attended by the whole of the members, a resolution was passed to the effect that in the reports to be drawn up after the completion of the inquiry (and now published in this volume) no reference should be made to politics in any shape or form, and also that the thorny question of religious controversy in connection with education should be absolutely ignored, even to the extent of not putting on record the views held on the subject in America. It was felt by all the Commissioners that if any good is to result from the work they were about to commence, all such contentious matters must be omitted from their reports; and I can only congratulate them upon the decision thus wisely made.

The following gentlemen who were members of the Commission have sent in reports, which are included in this volume, arranged, as far as possible, alphabetically:—

ARTHUR ANDERTON, ESQ., J.P., Alderman, and Chairman of the Technical Instruction Committee of the West Riding County Council. (Nominated by the County Councils Association.)

HENRY E. ARMSTRONG, ESQ., PH.D., LL.D., F.R.S., V.P.C.S., Professor of Chemistry in the City and Guilds of London Central Institute.

W. E. AYRTON, ESQ., F.R.S., Professor of Physics in the City and Guilds of London Central Institute, Past President of the Institution of Electrical Engineers.

THOMAS BARCLAY, ESQ., LL.B., PH.D., late President of the Paris Chamber of Commerce.

A. W. BLACK, ESQ., J.P., Mayor of Nottingham, Chairman of the Nottingham Education Committee.

R. BLAIR, ESQ., M.A. (Edin.), B.Sc. (Lond.), Assistant Secretary for Technical Education of the Department of Agriculture and Technical Instruction, Ireland. (Nominated by the Department of Agriculture and Technical Education, Ireland.)

J. ROSE BRADFORD, ESQ., M.D. (London), D.Sc., F.R.C.P., F.R.S., Professor of Medicine, University College, London.

HARRY COWARD, ESQ., President of the National Union of Teachers (Nominated by the National Union of Teachers.)

THE REV. PROFESSOR FINLAY, S.J., F.R.U.I., Member of the Intermediate Education Board and the Technical Education Board, Ireland; Professor of Political Economy, University College, Dublin. (Nominated as official representative of the Board of Agriculture and Technical Education of Ireland.)

T. GREGORY FOSTER, ESQ., B.A., PH.D., Assistant Professor of English in University College, London, and Secretary to the College.

W. C. FLETCHER, Esq., M.A., late Fellow of St. John's College, Cambridge; Head Master of the Liverpool Institute, Liverpool.

W. H. GASKELL, Esq., M.D., LL.D., F.R.S., Fellow of Trinity Hall, Cambridge; University Lecturer in Physiology.

THE REV. H. B. GRAY, D.D. (Oxford), Warden of Bradfield College.

W. P. GROSER, Esq., of the Inner Temple. (Representing the Parliamentary Industry Committee, and to inquire into Legal Education.)

ALDERMAN J. R. HEAPE, J.P., Vice-Chairman of the Education Committee, Chairman of the Rochdale Technical School.

THE REV. A. W. JEPHSON, M.A., Member of the London School Board.

MAGNUS MACLEAN, Esq., M.A., D.Sc., F.R.S.E., Professor of Electrical Engineering in Glasgow and West of Scotland Technical College, Glasgow. (Nominated official representative by (1) Glasgow and West Scotland Technical College; (2) Edinburgh School Board; (3) the Technical and Secondary Education Committee of the Ayrshire County Council.)

THE REV. T. L. PAPILLON, M.A., Vicar of Writtle, Essex; late Fellow and Tutor of New College, Oxford; formerly Fellow of Merton College.

HENBERT R. RATHBONE, Esq., B.A., Barrister-at-Law, Member of the Education Committee and Deputy Chairman of the Committee on Elementary Education, Liverpool.

H. R. REICHEL, Esq., LL.D., late Fellow of All Soul's College, Oxford; Principal of University College of North Wales, Bangor, and Member of the Welsh Intermediate Education Board. (Nominated as official representative of University Colleges of Cardiff, Aberystwyth, and Bangor.)

JOHN RHŷs, Esq., M.A., D.LITT. (Oxford), HON. LL.D. (Edinburgh); Professor of Celtic, and Principal of Jesus College, Oxford; Fellow of the British Academy.

W. RIPPER, Esq., M.I.C.E., Professor of Engineering in University College, Sheffield; Member of the Sheffield Education Committee.

CHARLES ROWLEY, Esq., M.A., J.P., Member of the Manchester Education Committee and of the Manchester School of Technology; Chairman of the Manchester School of Art.

A. J. SHEPHEARD, Esq., Chairman of the Technical Education Board of the London County Council.

A. EDMUND SPENDER, Esq., B.A. (Oxford), Barrister-at-Law; Director of Plymouth Girls' High School; Member of Plymouth Chamber of Commerce Executive; Member of Committee of the "Mount Edgecumbe" Industrial Training Ship.

JOHN WHITBURN, Esq., Member of the Education Committee of Newcastle-on-Tyne.

Mosely Educational Commission.

PREFACE.

As the originator of the Industrial Commission to the United States in 1902, I propose in the present instance to follow the course adopted in connection with the report on that occasion, viz. : to write a short introduction giving my own impressions, not as an educationalist, but simply as a business man : and to leave the various members of the Commission, who have made a special study of education in practically all its aspects, from primary teaching in the board schools to advanced university practice, to state their views and conclusions in their individual reports.

The story of the origin of the Industrial and Educational Commissions to the United States takes me back to South Africa some 15 years ago. I had for many years been engaged in mining operations at Kimberley, which, in common with the work of the great bulk of the diamond diggers, had proved unremunerative, when Gardner Williams, the Californian engineer, arrived in South Africa, and took over the management of the De Beers Company, which the late Mr. Cecil Rhodes was just then amalgamating. Gardner Williams in turn imported the late Louis Seymour. To the latter, by the way, the British nation owes a debt of gratitude for his engineering work in Natal in the early stages of the recent Boer War. By repairing bridges as fast as they were destroyed by the enemy, and so keeping open the lines of communication without which operations in Natal would have been impossible, he and his volunteer company did yeoman service : and ultimately he lost his life whilst leading some of his men to cover in the defence of a bridge at Zand River. Gardner Williams and Louis Seymour were followed by many other American engineers, including Perkins, Jennings, and Hammond, the two last, it is interesting to note, being graduates of Harvard University. Under the guidance of these able men and many others, the development of South Africa was started ; and, in my opinion, her mining centres largely owe their primary success and subsequent prosperity to their efforts. Others from England and elsewhere have, of course, helped, but to Gardner Williams and Louis Seymour belongs the honour of being the first to put mining in South Africa on a sound basis, and to begin the building up of what is now one of the most important industries in the world, and certainly one of the richest heritages possessed by Great Britain.

The success of these engineers turned my attention to the United States, and some years ago I paid my first visit there for the purpose of seeing what sort of country it was that was responsible for sending so many level-headed men to the Cape. I spent some months in the country investigating, and was astounded at what I saw around me, not so much at the state of development that had been reached at that time as at what I discerned of the future. I felt that a country teeming with such natural resources must, in the hands of capable men thoroughly acquainted

with their business, play an important part in the future of the world, and was bound to exercise a far from negligible influence upon the industries of the United Kingdom. So far as I was able to ascertain, the form of education given in the United States is responsible for much of its success, and I returned home determined, if possible, to get together a party of experts to visit the country and test the soundness of my conclusions. I felt that not only must we investigate the educational system in vogue, but that the workmen, through their trades unions, should also be given an opportunity of seeing at first hand what is being done on the other side of the Atlantic. Holding these opinions, I organised my two Commissions, the work of which is now too well known to require any long description from myself. The great question which the industrial side had to answer was: "How is it that the United States can afford to pay half a dollar in wages where we pay a shilling, and yet compete with us in the markets of the world?" The reply is to be found in my own views on the subject, and in those of the twenty odd delegates of the Industrial Commission as given in their reports. The subjects placed for investigation before my Education Commission were:—

1. The development of individuality in the primary schools.
2. The social and intellectual effects of the wide distribution of secondary education.
3. The effect of specific instruction given (a) in business methods; (b) in applied science.
4. The present state of opinion as to the value of professional and technical instruction of university rank designed with special reference to the tasks of business life.

My first duty, which is only a pleasure, is to thank the good people of the United States, especially those connected with education, for the help they so freely offered on all sides, and for their hospitality—almost overwhelming in its volume. My original intention was that this Commission should have started some two years ago. When, with a view to preparing the way, I went to America provided with letters of introduction from Mr. Choate and Mr. Sadler to a great number of leading educationalists and other citizens, President Murray Butler, of Columbia University, generously placed his services at my disposal and undertook to work out the whole scheme for me; and since then I have made two trips to the United States and consulted with him, besides having had much correspondence in connection with the work. I can only express my deep sense of gratitude for having had the benefit of his untiring energies and magnificent organising capabilities, which have rendered the task of the Commissioners one of complete ease. The whole tour was mapped out for us, and at each place we visited committees were appointed to receive us and show us all that there was to be seen; and again I must tender my thanks to those committees in New York, headed by Dr. Maxwell, of the Board of Education, and at the various points visited by the Commission, for their devotion to our cause and for the infinite trouble they took on our behalf. The committees to which I refer consisted in most cases of from six to twelve gentlemen, representing various phases of education, so that we were able to separate into groups and to visit the particular institutions in which each delegate was more especially interested with the greatest advantage and the least possible

expenditure of time. In every city to which we went banquets were arranged, and the principal educationalists there invited to meet us—a course inaugurated by President Butler, who, himself, two days after our arrival, gave us a most charming banquet at Sherry's, in New York, where we met not only local educationalists and notable citizens, but also the presidents and professors of universities for hundreds of miles round, who came to discuss and to assist. On that occasion we listened to some most interesting speeches, as, in fact, we did throughout our tour. It was suggested by one of the speakers that the early pioneer spirit, which had to fight the Red Indian and subjugate the country, might well be responsible for the success of the United States apart from education. From this expression of opinion I beg to differ. During the many years I spent in South Africa I saw the same class of men visit its shores, and yet comparatively little progress was made, not because the country had no resources, but because education there had not reached the same high plane that it has in the United States.

On leaving New York, the whole Commission travelled to Washington, where President Roosevelt honoured us by giving us a reception at the White House, and making a most interesting address to the delegation. One notable passage in his speech was the reference to his belief that while education could not make a country, the nation that neglected to educate its people would be assuredly undone in the long run. From Washington we journeyed to Baltimore, Philadelphia, New Haven, Boston, Niagara, and Chicago, certain of the Commissioners seeing also many educational institutions off the beaten track. At Chicago the party, already reduced in numbers by various members having separated from it for the purpose of special investigations, finally dissolved, some being dispatched on missions of inquiry as far West as California, others going West and North-West, some into Canada, whilst a considerable number returned East *via* Indianapolis, Dayton, and Pittsburg. The longest stays were made at New York (some ten days) and at Boston and Chicago (a week each).

Although I do not desire in any way to encroach on the reports of the delegates, nor do I pose as an educationalist, a few remarks from myself may be of interest. One of the things that struck me, all through the United States, was the large amount of money devoted to educational purposes, the buildings being magnificent and the equipment lavish. The teachers seem fired with enthusiasm, and there is a thirst for knowledge shown by pupils of all ages which is largely lacking in our own country. In contrast to our education, which has to a large extent been "classical," I found that in America it is the "practical" subjects which are principally taught, and technical classes and schools are to be found everywhere. There are also excellent opportunities, for those going into the professions to take up classical subjects; but with the ordinary "everyday" boy who has to fight his way in the world, the bulk of the time is devoted to practical subjects likely to be of most use to him in after-life. American boys remain at school much longer than is the case here, often, in addition, passing through to the secondary schools and colleges at little or no expense to their parents or themselves. I am disposed to think that our own boys leave school much too soon. The arrangements here in regard to school vacations in agricultural

districts are not such as best meet the needs of the farming class. In the United States the terms are so arranged that during harvest time, when the boys can be of real assistance to their parents and at the same time get the good fresh air from the fields, the schools are closed; but the Christmas vacation is very short. My observations lead me to believe that the average American boy when he leaves school is infinitely better fitted for his vocation and struggle in life than the English boy, and in consequence there are in the United States a smaller proportion of "failures," and fewer who slide downhill and eventually join the pauper, criminal, or "submerged tenth" class. The aim of education in America is to make every boy fit for some definite calling in life, and my own experience leads me to think that nearly every lad if properly trained *is* fit for something. All cannot be great successes, and clever, successful men are to a large extent born, not made; but I do believe that it is possible to teach every lad some branch of industry that will enable him to earn an honest livelihood and make him a help rather than a burden to society. As I have said, the true-born American does not become a drag upon his fellows, but takes his place as a respectable citizen, earning his living soberly and honestly.

The types of men that the educational methods of America have developed appear to me to be entirely different from what we produce at home. President Murray Butler, for instance, is not only a man of great learning and high academic attainments, but possesses the initiative and organising capacity that are required in a railroad president or chairman. Another instance is President Eliot, of Harvard University, who not only presides over that institution, but steps out into the area of public affairs to give the people the advantage of his great learning and experience: he is also one of the moving spirits of the Civic Federation—an institution for the settlement of labour disputes, not so much by arbitration after a rupture has openly occurred, as by bringing the parties together for conference in order that they may adjust their differences at the very earliest sign of a dispute. Again, President Harper, of the Chicago University, is a man of enormous resource and organising capabilities, a professor of the dead languages who has made a special study of Hebrew and the Semitic tongues generally: he not only manages this astonishing institution, but actually himself raised the money required to bring it into existence. Mr. Rockefeller, of the oil industry, has given immense sums to help this university. Pratt Brothers, in providing enormous sums of money for the Pratt Institute, besides giving it their time and attention, also form another striking object-lesson: and the Cooper Union—supported by the Hewitt family—is performing more than useful service to New York. Many other names might be mentioned, for everywhere one is confronted with the same alert, up-to-date, organising men, who possess these business qualifications in addition to their academic learning. How does this compare with our own professors and heads of universities, etc.? I must leave the reader to draw his own conclusions.

Another point that struck was the intense belief of the Americans in the education of the masses. They feel that their country cannot progress and prosper without it, and that if the people are to be raised it must be done through the medium of education. Not only do they see in it a "moral policeman," but they argue also that in

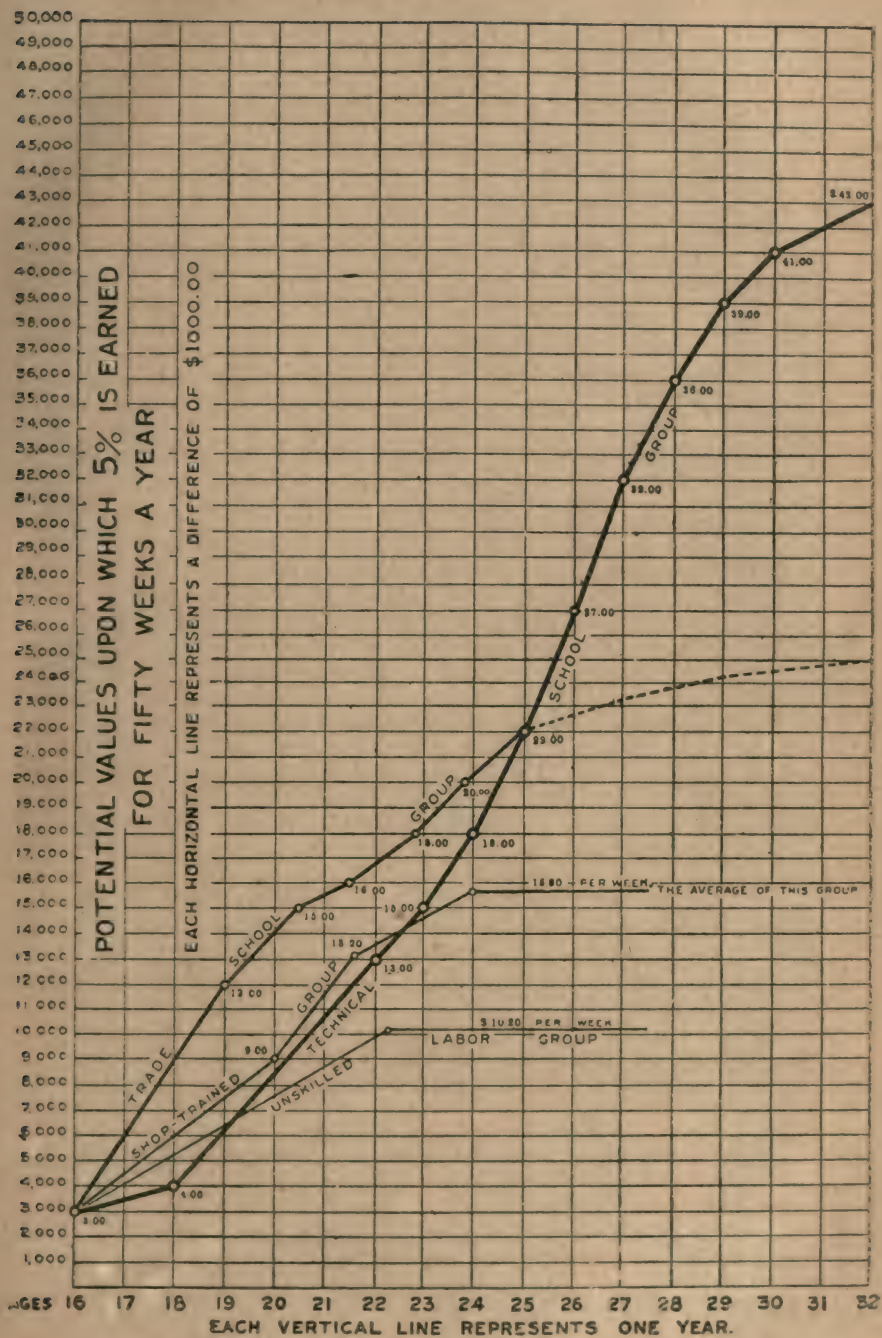
the long run it is far more economical to educate the people than to have to support in the prisons, workhouses, etc., the unfortunates who, through an inferior education, or none at all, have been left unfitted to earn their livelihood. It is felt, indeed, throughout the United States that education is their safety and salvation: in the words of President Roosevelt, when addressing the Commission at Washington (which I again take the liberty of quoting), "Education may not make a nation, but a nation would certainly be ruined without it."

Further, from a purely business point of view, Americans see in the money spent on education a magnificent investment for their country. Their conception of the matter from this aspect is well illustrated by a presidential address delivered in December, 1903, by Mr. James M. Dodge to the American Society of Mechanical Engineers, on the "Money Value of Technical Training."* In this he outlines the actual progress made by four groups of men working in the mechanic arts—the unskilled labour group, the shop-trained or apprentices group, the trade school group, and the technical school group—and plots out his average results in a graphic form on the chart which is here reproduced. The curves scarcely need explanation: each shows the average progress in earning capacity of the groups to which it refers.

It will be seen that for the unskilled labour group (though the data are lacking for its early progress) the maximum is lowest but is earliest reached. The apprentice, regarded as the representative of the shop-trained group, begins to earn 3dols. a week at the age of 16 (3dols. a week for 50 weeks = 150dols. = 5 per cent. on 3,000dols., which is, therefore, taken as his "potential or invested" value); his wages, and, therefore, his value, rise rather more rapidly than those of the unskilled labourer, and his maximum is somewhat higher. The average member of the third group spends three years at a trade school, which he leaves at the age of 19 and gets a situation at 12dols. a week—as much as is earned by the apprentice group at 21—and his earnings increase up to 22dols. a week at the age of 25. Data are lacking to determine his further progress, but the presumption is that the rate of increase will slacken, and the curve will ultimately become parallel to that of the shop-trained man, though higher on the chart. The fourth class consists of those who stay at school till 18, and then study at one of the higher technical institutes till 22, when they begin practical work. At that age their average weekly value is 13dols., or 5dols. less than that of the trade school group. But the difference is soon made up, and at the age of 25 the two groups stand level, but the curve of the technically trained men subsequently continues to rise rapidly long after that of the trade school group has (probably) become level.

Again, whilst our rich men spend large sums upon sport of various kinds, it appears to be the hobby of moneyed Americans to devote enormous amounts of money to the endowment and equipment of various educational institutions. They pass their lives in strenuous work, and their labours in building up industries and developing territory are of infinite value to their people, recalling what was the

* Mr. Dodge also expressed his ideas on this subject in a somewhat different form in the November number of the *St. Nicholas Magazine*, and I have to thank the editor for courteous permission to make use of the article.



THE MONEY VALUE OF TECHNICAL TRAINING.

ideal of the late Cecil Rhodes, viz.: that the truest philanthropy consists in creating industries and fields of industry to occupy the masses and afford them remunerative employment.

It has sometimes been urged that the American is a materialist. Those who hold such an opinion cannot, I think, have carried their analysis very deeply; and they fail to distinguish between materialism and ambition—qualities in reality as wide apart as the poles, although very easily mistaken at first sight. The one has every vice, the other every virtue. Personally I credit the American nation with an intense ambition not only to raise themselves individually, but also to use their efforts for the raising of their fellows and for the furtherance of civilisation.

Again, I have heard it urged that in America there is no aristocracy but that of money. Once more I beg to differ. The contention may on the surface appear to be true, but if the matter be probed a little deeper it will be found that in reality the aristocracy of money is an aristocracy of brains, for the reason that since few of the people of the United States have, as yet, inherited riches, the fact that they have succeeded financially and become wealthy is a proof that they must have possessed remarkable ability and brain power in order to achieve their success.

I would mention that, though I was not in the States to criticise, I was desired by many of those interested in education there to do so; and although I prefer in general to leave this matter to the expert judgment of my Commissioners, there were several notable points that struck me forcibly. One was the large preponderance of women teachers in all branches of education throughout the country. Personally, I should favour the employment of female teachers for both boys and girls up to the age of, say, twelve years: for the reason that (as it appears to me) the woman claims the sympathy of children in younger years, and understands the working of their minds, in a way and to an extent that no man can. Beyond this point, however, I am in favour of turning the pupils over to men: and here, if I may say so, American education in my view requires some overhauling. Not only did I find comparatively few men engaged in teaching, but also few preparing to become teachers: and upon further investigation I discovered the reason to lie in the smallness of the remuneration, which is insufficient to attract a good class of men. This I think a serious defect, and I venture to suggest that higher salaries should be paid to teachers of both sexes, but especially to men, in order to make it worth their while to take up the profession not merely as a duty but as a remunerative occupation. A second point I noticed was the neglect of musical talent amongst the school children. How music makes for a bright and happy home and tends to raise the standard of life from an idealistic point of view need not be enlarged upon, yet nowhere did I find instrumental music forming a part of the instruction, and in the few cases where vocal music was included it was but poorly taught. The same characteristic prevailed in the homes of the people, many of which I had the privilege of visiting on my various trips. Usually there was a handsome piano in the house, but I saw few signs of its being used. Occasionally there were also other instruments, such as harps, etc., but again, on inquiry, I learned that these were, in the great majority of instances, merely ornaments. Seeing how large a proportion of the population

are of German or other foreign blood, all essentially musical, the neglect of this subject was to me a very surprising circumstance.

The question of sports in the American schools as compared with those of this country also impressed me. Of course, the people of America are fond of sport and take a keen interest in baseball and football, but such matters do not form anything like so important a part of the everyday life of the schoolboy there as is the case here, and not nearly so much time is devoted to them. Further, schoolmasters in the United States are chosen purely for their academic attainments and power of imparting knowledge to their pupils, without reference to their athletic qualities or achievements. The absolute devotion to sports, to the exclusion of almost all other interests, which of late years has crept into all classes of English schools, forms, I think, one of the weakest points in our educational system.

Although, as already stated, my position has been that of an observer and not a critic, yet having been asked to criticise not only American education but other matters, I feel bound to say that during my travels in the United States I have seen many minor faults. I would, however, add that these faults are, in my opinion, merely those of youth. The country has grown too quickly, but on the whole I think its people are working out on sound lines the main problems that have to be faced by any young country. One often hears American municipal affairs referred to as unsatisfactory. Being but a visitor and not a resident, I have perhaps no right to pass an opinion, especially as I am unfamiliar with the particular points condemned; yet I cannot help feeling that so long as residents and citizens of the better class remain aloof from public affairs so long will municipal government be of an unsatisfactory nature. The remedy is, therefore, largely in the hands of the people themselves.

Looking into the future of our own country, I feel bound to record my belief that the *régime* of the past, however successful it may have been, is obsolete. Honesty, doggedness, pluck, and many other good qualities possessed by Britons, though valuable in themselves, are useless to-day unless accompanied by practical, up-to-date scientific knowledge, and such knowledge only becomes possible with an enlarged and enlightened system of education, such as the United States possesses. I feel that if we are to hold our position as the dominant nation—or one of the dominant nations—of the world, we cannot afford to lag behind in educational matters as we are now doing. What struck me in going through the public schools, whether primary or college, of the United States was the success attained in making the scholars self-reliant, in bringing out their individual qualities and teaching them to reason. Professor Armstrong, one of the Commissioners, in his presidential address to the educational section of the British Association at Belfast in 1902, laid special stress upon this point, stating that whilst we recognise three "R's" in our system of primary education, we need to have four—the last being the development of the reasoning power in the scholar. In some respects this seems to me to be the most important factor of all in American education, and I think it largely accounts for the success of the pupils in after life. Their individuality and reasoning powers are developed to the fullest extent, and as a consequence they make up their minds at a comparatively early age to carve out a career for themselves. The teachers appear to be able to accomplish a sifting process whereby

a scholar's strong points are singled out and developed, for it is being realised in the United States that all-round knowledge, although useful in itself, must in the present day of fierce competition, be supplemented by the work of specialism; and the bulk of American boys on leaving school, I believe, start out with the fixed determination to take up a certain line of work, having largely fitted themselves for that occupation or profession whilst at the public school or university.

The teaching of the coloured races in America was, I think, a novel feature to those of the Commissioners who investigated it: and I venture to think the subject an important one when it is remembered that the British Empire is largely composed of coloured people. The work that is being undertaken by Booker Washington for the uplifting of his people, the coloured races of the United States, fills me with admiration and hope for their future, although I do not believe that (except in isolated instances) the coloured races will ever become serious competitors with whites under similar conditions.

I am in hopes that much good will be the outcome of this Commission of Inquiry: and I think that many of its members will have been convinced, as I am personally convinced, that if the British Empire is to hold its own, our old industrial methods will have to be dropped, and especially our present method of popular education will have to be changed. Enormous strides are being made by the United States, with its truly wonderful natural resources to draw upon. On the other hand, Germany, which is also making giant strides, has not such natural advantages, but has made her progress solely through the force of scientific knowledge and the education of her people. To come nearer home, one is confronted with the fact that the Scotsman's success, wherever he goes, is proverbial: and although doubtless his fine characteristics stand him in good stead, the fact remains that Scotland has been ahead of England in the education of her people.

I am an intense believer in the ability and stability of the Briton, but he cannot successfully face the competition of the world with the obsolete weapons now at his command. The warning of the Prince of Wales came none too soon: if we wish to hold our own in the world's race, we must indeed "wake up." We have magnificent material: it remains with the nation at large to decide whether or not it shall be properly utilised.

I have just lately received a letter from Philadelphia containing the following paragraph, which I think so much to the point that I quote it exactly as written:—

"Conservative school men are never apt to approve of any fundamental improvement in educational methods. Such people in our country must be compelled to stand aside for the march of events. We cannot wait for them to die, as nations have done in past centuries. The development of the steam engine, the application of electricity, the growth of great cities have come on so rapidly, utterly changing not only parental relations for a large part of the people, but also many industrial, moral, and civic conditions, that we find ourselves all at once up against several problems of vast importance, and we conclude that they must be solved by means of the schools. Old methods, however, will not

answer the purpose of the new conditions, which demand intelligent training in the practice as well as the theory of morals and citizenship as in engineering in its various branches."

In conclusion, I must return for a moment to the early part of my preface dealing with the object of the Commission. This, as set forth in the questions numbered 1 to 4, was to ascertain how far education in the United States is responsible for her industrial progress. In America, where there is so much to see, one is tempted to leave the main question and take up side issues. The essential feature of the inquiry was, however, never absent from my own mind; it was the principal object with which we started out, and all my efforts were directed solely to that end. I trust this was also the case with all the Commissioners, and that it was the mainspring of all their inquiries; but how far it was so I must leave the reader to judge for himself.

A. MOSELY.

Mosely Educational Commission.

CONTENTS OF REPORTS.

The following brief summaries of the main topics discussed by each of the Commissioners are given to facilitate reference to their reports. It is to be noted that Drs. Bradford and Gaskell confine their attention to medical education, Professor Ayrton deals specially with the education of the electrical engineer, Mr. Barclay with commercial education, Mr. Blair with technical education, Mr. Groser with legal education, and Mr. Spender with truant and reformatory schools. The remaining reports are of a more general character.

MR. ARTHUR ANDERTON [pp. 1-6] calls attention briefly to the main features of the American school system; he also refers to higher education as well as to the important work which is being done by the Bureau of Agriculture at Washington. In summarising his impressions, he dwells on the belief in education which is everywhere apparent and on the recognition by the leaders of industry of the value of well-educated men who have enjoyed the advantage of technical training. He comments on the predominance of female teachers in the schools.

PROFESSOR H. E. ARMSTRONG [pp. 7-25] deals briefly with the various grades of educational activity, contrasting American work with that of corresponding English institutions. In connection with the common and high schools, he refers particularly to the maintenance of discipline and to the lack of the power of concentrating attention manifest in the scholars. The value of manual training is insisted on. Co-education and the predominance of female teachers are discussed. The undue length of the college course and of the subsequent professional course is commented on: its unfortunate consequences are pointed out, as well as the need, both in America and here, of reforming and improving the system of education so as to shorten the period of training. The remarkable manner in which science is organised in the service of the State in America is illustrated more particularly by reference to the work done in Washington by the Department of Agriculture; and our need of effective organisations similar to those which exist in the United States is insisted on.

PROFESSOR W. E. AYRTON [pp. 26-37] deals only with the education of the electrical engineer. He expresses the opinion that in their method of training electrical engineers the United States are in advance of Great Britain, more especially because of the close bond of union established between the colleges and the works. He points out that it is generally agreed both that an engineering apprentice should be a college-trained man and that

an engineering professor in a college should be actively engaged in the practice of his profession. This theme is fully developed in the report, details being given of the actual working of the system. After considering the somewhat late age at which students enter the works, Professor Ayrton draws attention to the superior organisation of the American colleges and to the manner in which the teaching of electrical engineering is subdivided, the tendency being to draw lines vertically between branches of the subject and not horizontally between students of different ages. The final conclusion is that whilst the American student is usually not as scholarly nor as well read as the English student of the same age, "he has his knowledge in a better form to apply": the British system turns out a man full of knowledge and principles, whilst the American product is a business man with a scientific training.

MR. THOMAS BARCLAY [pp. 394-400] deals only with commercial education. He discusses the American standpoint and shows that it is very different from our own, in that there is, he thinks, no problem, as we understand it, of commercial education, the only questions to consider being what is the proper age for a young man to enter business and whether a college education is desirable. The character of the product coming from the schools is commented on. Mr. Barclay also discusses the causes of American prosperity, pointing out that education, at present, is effective only in a minor degree.

MR. A. W. BLACK [pp. 38-39] records his experiences very briefly, his conclusions being (1) that public opinion is much more strongly in favour of education than it is in this country; (2) that the scholars in America take a keener interest in their studies than is generally apparent here; and (3) that the teaching given in the elementary schools produces mental alertness and readiness of mind to a greater extent than is secured in this country.

MR. R. BLAIR [pp. 40-63] devotes the whole of a lengthy report to the consideration of technical education. The British system is first compared with the German and American, especially with reference to the part played by evening schools—of which there are far more in this country. The schools are then discussed under three heads—trade schools, secondary technical schools and schools for captains of industry. The Pratt Institute, New York City, is first referred to, the ideas which govern its two years' day course being set forth at length; it is pointed out how success has been found to depend on close contact with industrial work. Sibley College, Cornell, and the Massachusetts Institute of Technology are taken as examples of leading institutions training the captains of industry. The success of the latter especially is considered under the significant headings, "Hard Work," "Close Touch with Industries" (Mr. Blair supports Professor Ayrton's view), "Practical Character of the Instruction," "Boldness of the Students," and "Minor Causes," the absence of prizes and of ranking being mentioned under this last head. After an important reference to the Wharton School of Commerce, Mr. Blair proceeds to consider at length the relation of technical education to industry, and shows that American experience is now entirely favourable to the introduction of the college-bred man into commerce and industry.

DR. J. ROSE BRADFORD [pp. 64-78] deals only with advanced subjects of medical education, considering these under heads such as Relation of Hospitals to Medical Schools, Chemical Laboratories, and the Teaching of Medicine and Pathology. He was much impressed by the enthusiasm shown both by students and by teachers and by the fact that all the leading universities had fine laboratories, the equipment being of a high order of excellence. In all the medical schools there is a tendency to bring clinical medicine more closely into relation with recent scientific developments than is the case here, blood-counts and other investigations being made not from a mere diagnostic point of view but in a more or less routine fashion. Such a practice must tend to put medicine on a more scientific basis. Instruction is far more systematised. There is a marked tendency to abolish didactic lectures and to pay increased attention to laboratory instruction, but the opportunities afforded to students of obtaining practical acquaintance with disease are fewer than are given here. In the examination for the degree the record of the work done by a student plays an all important part.

MR. H. COWARD [pp. 79-99] gives his report in the form of an itinerary, the schools and other institutions visited in each town being commented on in succession and their good points noted. He is enthusiastic in his appreciation of American belief in the value of education, and paints the United States as far in advance of us in that it has a graded and co-ordinated educational system from the kindergarten to the university.

THE REV. T. A. FINLAY [pp. 100-105] deals appreciatively with all grades of education, outlining the essential features of each. Incidentally, he calls attention to the fact that no boy in an American school looks forward to digging and delving for hire as a means of livelihood, nor does any girl contemplate domestic service as her future work in life. Reference is made to the parochial schools which, built and equipped by voluntary contributions, impose a heavy burden on their supporters.

PROFESSOR T. GREGORY FOSTER [pp. 106-129] dwells on the manner in which the belief in education permeates American society, and on the consequent development of educational agencies. He then considers critically and at length the organisation and working of the higher institutions more especially in regard to the teaching of English, of history and of modern languages and literature. Attention is drawn to the advantages which the teacher derives from the comparative absence of examinations; and the system of "accredited schools"—from which students pass without examination directly into the university—is fully explained. The training of teachers is dwelt upon at some length. Methods of organisation and administration are considered in a final section, in which the *esprit de corps* and devotion to their Alma Mater that actuate students, past and present, in the universities and colleges is specially referred to.

MR. W. C. FLETCHER [pp. 130-146] first considers the appreciation of education in America, especially as shown by the development of the secondary school system. He then deals at length with the work done in the schools, which he characterises as mediocre, whilst

he speaks of the discipline and the tone prevailing in them as excellent. The influence of examinations is considered. The time spent in university study is commented on. Particulars are given of the University of Kansas and of Illinois. Mr. Fletcher also discusses the position of private schools, manual training in high schools, co-education (which he does not altogether favour) and scholarships; finally, he calls attention to a number of minor points.

DR. W. H. GASKELL [pp. 147-161] deals with the teaching of anatomy and physiology. He first calls attention to the fact that there are no outside examiners in the medical schools and that whether a student passes or not is decided by his teachers alone. The Harvard method of concentrating attention upon at most two subjects at a time is then fully described and discussed, its thoroughness in comparison with our English system being pointed out, and the possibility of introducing it here considered. The length of the course of instruction is incidentally referred to. Dr. Gaskell insists on the advantage of bringing cognate subjects together and of teaching all the preliminary subjects in a scientific school apart from the hospital. Finally, teaching appliances are considered, the wealth of provision being dwelt upon. Dr. Gaskell particularly directs attention to the large numbers of students—future teachers—attending the classes in experimental psychology and to the absence of provision for this subject here.

THE REV. DR. GRAY [pp. 162-173] first considers the various causes of industrial progress in the United States, he expressing the opinion that whilst the present state of education there is the effect rather than one of the causes—still less the sole cause—of progress, the effect is every day becoming more and more a cause. He discusses the position of the teachers, pointing out that the profession as a whole attracts very few of the best men. He views the preponderance of women teachers with alarm. Co-education is referred to as having advantages which outweigh the disadvantages. Dr. Gray speaks in terms of praise of most of the teaching, especially the teaching of English; he directs attention to the appreciation in which manual training is held in the secondary schools. Lastly, he dwells on the *spirit* of American education—the *spirit* (as distinct from the method) which animates both teacher and pupil.

MR. W. P. GROSER [pp. 174-197] refers at length and in very general terms to American conditions under the heads: A, The Workman; B, The Officer; C, The Employer; D, The Methods. He also deals separately with legal education. He speaks of the American system as recognised as the most adequate invented for teaching law as a profession. A course for a central school of law in London is suggested.

MR. J. R. HEAPE [pp. 198-210] first refers to the profound belief in the United States in the value and importance of education and the manner in which it operates. After speaking of our deficiencies, he proceeds to consider the inclusion of educational handwork in the school curriculum. He points out that although in the teaching of sewing and cooking to girls we are in advance of America, there is a deplorable gap, so far as boys are concerned, between the

kindergarten and the commencement of woodwork at 12 years of age. He then refers to the work which is being done in this direction by two pioneer institutions, the Teachers' College, New York, and the School of Education under Dr. Dewey in Chicago. He then passes to the consideration of manual training proper, urging that greater facilities should be afforded for such work.

THE REV. A. W. JEPHSON [pp. 211-234] first comments on the similarity in the educational methods adopted throughout the United States, on the enthusiasm for education which is everywhere manifest, and on the systematic way in which education is administered. He illustrates the manner in which the various grades of free schools are co-related by quoting the courses of instruction given in several kinds of schools. After commenting at length on the arrangement and work of the elementary schools, he briefly discusses the training of teachers, appending to his remarks the scheme of lessons given at the Peabody School in Nashville, Tenn. Evening and vacation schools are alluded to in a final paragraph.

PROFESSOR MAGNUS MACLEAN [pp. 225-245] first deals generally with the development of the American educational system, and then considers in detail the attitude of employers towards the technically trained students of the higher institutions, his conclusion being that the attitude of favour with which college training is regarded by employers exercises a telling influence, as it gives parents and children an interest in school work from the primary grade upwards. The features of American technical education are then discussed and contrasted with our own; the work done by correspondence schools is referred to in this section.

THE REV. T. L. PAPILLON [pp. 246-255] first considers the extent to which education is a factor in the industrial progress of America. After touching on the facts that there is no "religious difficulty" and that education is comparatively free from the tyranny of examinations, he dwells on the manner in which it is being brought into close contact with life and the needs of life and on its eminently practical and popular character. Throughout the report, a comparison is made between American institutions and our own.

MR. HERBERT R. RATHBONE [pp. 256-273], after referring to the esteem in which education is held, proceeds to consider in detail the arrangements of the elementary schools under the heads—building, staff, discipline, moral teaching, manual training, physical culture, co-education, and organisation. After briefly referring to museums, he calls attention to the work done by the department for children in the Boston Public Library. He then gives an account of the impressions he formed during the visit which a small party of the Commissioners, of whom he was one, paid to the West and South, including the newly-settled Oklahoma Territory.

PRINCIPAL H. R. REICHEL [pp. 274-309] deals at considerable length with the subject of manual training, insisting on its importance, and describing the character of the work done in various schools. He then considers the State university system of the Middle West with reference to the universities at Ann Arbor (Michigan), Madison (Wisconsin), and Minneapolis (Minnesota).

The accrediting system of admitting pupils is referred to. The work of the agricultural colleges and experiment stations and of the Bureau of Agriculture at Washington is fully dealt with. After recording his general impressions of the schools, he passes to the consideration of the Canadian universities and schools.

PROFESSOR RHÏS [pp. 310-329] comments on the earnestness with which Americans regard education and their consequent willingness to spend money on it; he also contrasts the liberality of their wealthy men with the niggardliness of the bulk of similar Englishmen. After discussing the relations between teacher and taught and the question of discipline, he refers to the leisurely way in which education is carried on; to the liberty of action enjoyed by teachers owing to the absence of examinations; and to the fact that the schools are but little influenced by considerations of social status or by any religious difficulty. He hints, however, at the possibility that a demand for denominational teaching may arise. He somewhat deprecates co-education and the preponderance of women teachers. College and university education is then discussed, especially with reference to the teaching of languages. The attention paid to ethnology in America is contrasted with our gross neglect of the subject.

PROFESSOR W. RIPPER [pp. 330-343] deals chiefly with the education of engineers. In speaking of the common schools, he refers to the preponderance of women teachers. Passing to the secondary schools, he points out how these are as much a part of the system of education as the elementary schools are. The existence of manual training and of commercial departments in the schools is touched upon. College education is then considered and its value pointed out. Much is said of the ambition of students and of the sacrifices they make to obtain an education. The opinion which the practical man has of the college trained man is referred to, its adverse as well as its favourable character being noted. Professor Ripper then touches on the advantage American teachers enjoy from having students of a ripe age; on the relation between manufacturers and colleges; on the education of apprentices; on evening classes; on correspondence schools; and on the industrial success of America. A series of conclusions terminates the report.

MR. CHARLES ROWLEY [pp. 344-350], after referring to home conditions, of which he declines to say anything unduly depreciatory, criticises the products of American arts and crafts somewhat unfavourably; he contrasts the condition of the poor with the costly but often unattractive magnificence of public buildings in the great cities. The condition of journalism is referred to. The great work which is being done at Hampton and Tuskegee to educate coloured children is commented on appreciatively.

MR. A. J. SHEPHEARD [pp. 351-359] briefly considers the general views on education held in America; the organisation of the education authority; teachers—their training and their work; manual training; and technical education. He dwells on the fact that education is mainly under the guidance of paid officials, and deplores the exclusion of the voluntary element. He regards the preponderance of female teachers unfavourably. Mr. Shephard urges very strongly the importance of granting degrees to those

who have attended courses specially arranged for teachers. He also recommends that experiments should be made to test in a systematic manner, both in elementary and secondary schools, the value of an extended course of manual training.

MR. A. EDMUND SPENDER [pp. 360-375] deals exclusively with truant and reformatory schools and with the measures adopted in dealing with juvenile offences. The measures used for the purpose of reform are described under three heads—the methods of persuasion, caution, and detention; the first and second of these are considered more particularly as being almost peculiar to America. A full account is given of the working of the juvenile courts, by the establishment of which the trial of cases in which children are offenders is entirely dissociated from the contamination and publicity of police-courts. Much information is given as to the working of the parental schools and as to the superiority of the cottage system over the barrack system too frequently in vogue in our country. The manner in which the principle of self-government is applied in some of the reformatory schools is also described.

COUNCILLOR J. WHITBURN [pp. 376-393] deals in a very general manner but at length with the various grades of schools, recording an almost uniformly favourable opinion of them. He enters very fully into an account of the International Correspondence Schools at Scranton, Pa., and has much to say of the value of teaching by correspondence. The effect of education upon industrial progress is discussed in the final section of the report, to which a series of recommendations is appended.

Mosely Educational Commission.

JOINT REPORT.

The undersigned members of the Mosely Educational Commission are deeply impressed by the evidence they have gathered in the United States of the absolute belief in the value of education both to the community at large and to agriculture, commerce, manufactures and the service of the State. Although, in the past, the belief in education has been the effect rather than the cause of American prosperity, during the last quarter of a century education has had a powerful and far-reaching influence; and it cannot be doubted that, in the future, it will become more and more the cause of industrial and commercial progress and of national well-being. They are satisfied that, in years to come, in competing with American commerce we shall be called upon to face trained men, gifted with both enterprise and knowledge. They desire to impress on the British public the absolute need of immediate preparation on our part to meet such competition.

They have also been impressed with the spirit which animates both teachers and pupils, and by the manner in which the two classes co-operate in the schools and colleges. Willingness, if not an overwhelming desire, to learn seems to characterise the scholars; and teachers seem to be possessed of but one wish—that of helping their pupils in every possible way. The absence of class prejudices and of any “religious difficulty” serves most materially to facilitate the work of the schools.

The closest connection is being established between theory and practice, the practical bent of the men of letters and science and the breadth of their outlook being very remarkable. The services of experts in various branches of knowledge are, therefore, held in high esteem and are in constant demand.

The important part which manual training is beginning to assume in the schools struck them very forcibly. Such work appears to be in many ways of high value as an educational discipline, especially in developing handiness and alertness, and in familiarising the scholars with constructive processes.

They have been much impressed by the liberality displayed not only by the public but also by private donors on behalf of education, as evidenced by the wealth of provision in the form of buildings and equipment which is everywhere made. On the other hand, they observe that the remuneration of teachers is by no means always placed on a satisfactory basis; and they have also been led to view somewhat with alarm the growing preponderance of women teachers.

Lastly, they would draw attention to the extent to which the work of education is organised and its various grades co-ordinated, whereby harmonious working is secured and overlapping avoided.

The need of effecting such organisation in this country, which was before apparent, now seems to them imperative, in view of the experience they have gained in the United States.

Although individual members of the Commission have expressed their thanks both to Mr. Mosely and to all those who have assisted them in the United States, they wish in their collective capacity to record their high appreciation of the value of the opportunity which Mr. Mosely gave them to gain experience likely to be of signal value to them in carrying on their work at home. They also desire to acknowledge with gratitude the courtesy with which they were invariably received, and to express their deep sense of the obligation under which they have been placed by all who assisted them in their inquiries

ARTHUR ANDERTON.

HENRY E. ARMSTRONG.

*W. E. AYRTON.

THOMAS BARCLAY.

ARTHUR W. BLACK.

*R. BLAIR.

JOHN ROSE BRADFORD.

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T. A. FINLAY.

W. C. FLETCHER.

T. GREGORY FOSTER.

W. H. GASKELL.

H. B. GRAY.

W. P. GROSER.

JOSEPH R. HEAPE.

ARTHUR W. JEPHSON.

MAGNUS MACLEAN.

T. L. PAPILLON.

HERBERT R. RATHBONE.

H. R. REICHEL.

JOHN RHËS.

W. RIPPER.

CHARLES ROWLEY.

ALFRED J. SHEPHEARD.

A. EDMUND SPENDER.

JOHN WHITBURN.

* Professor Ayrton does not agree with the reference to the preponderance of women teachers, and Mr. Blair regards the subject as an open question.



A TYPICAL MODERN SUBURBAN PUBLIC SCHOOL.

Mosely Educational Commission.

Report of Mr. ARTHUR ANDERTON, Representative of the County Councils' Association of England and Wales.

The people of the United States have long since made up their minds that the foundation of national and individual success is, to a large extent, to be found in the establishment of a sound general education. Having come to this conclusion they spare no expense in providing the necessary free schools, where children can obtain elementary and secondary education of the best type.

The school system generally consists of primary and grammar schools, these schools combined being equivalent to our elementary schools; and high schools, representing our ordinary day grammar schools and organised science schools.

The primary and grammar schools are designed to take the children from the kindergarten to the eighth grade, which they should reach at the age of 14 years; having successfully passed through the grammar school, they are then at liberty to enter the high school and there take a four years' course, which closes the free education provided by the State, or the city.

The schools are frequently mixed (boys and girls in the same classes); they are presided over by a head teacher, who has the assistance of a secretary and a complete staff of assistant teachers for every grade, the great majority being women. The teachers in many of the cities are well paid on a scale fixed by the Board of Education of each city or State. In some places we heard complaints of inadequate salaries.

The head teachers are consulted, and have considerable freedom in settling the curriculum of their particular schools. The character of the teaching is based on the deductive method, which undoubtedly has the great advantage of securing the attention of the children, in addition to training them to think for themselves, and creating a self-confidence and power of expressing their thoughts which is most valuable when they enter upon the active duties of life. The children are led at the very outset to believe that the teacher wishes to know their opinion, and, if it is wrong, will correct it. The system further leads the children openly to help one another, and fearlessly express their views in the presence of the whole class, thereby helping the creation of an *esprit de corps* which cannot but tell for good in after life. The self-consciousness that one so frequently notices in school children of the same class in England is almost entirely absent in American children, a result very largely brought about through the influence of the schools.

It is very possible that American children may not acquire the same amount of "book" knowledge as children do in English schools, but they undoubtedly learn to apply what they do know much more successfully than is generally the case here.

Very great importance is attached to the training of teachers. In all the cities and States ample provision is made for the training of all candidates for the teaching profession. It is essential that

before a candidate is considered qualified to enter the normal training school he should have successfully passed through the high school, thus giving assurance of a sound general education as a basis on which to specialise. There is no pupil-teacher system.

In order to keep regular teachers in touch with the work of schools other than their own, frequent conferences are held when matters are discussed bearing on all phases of the work in which teachers are engaged, new suggestions are invited, and generally the teachers are encouraged by the knowledge that their work is not confined to their particular school, but part of a great work extending through and influencing the life and character of a city, or a State, and the nation as a whole. Usually these conferences are presided over by the Superintendent of Education, who is thus brought into touch with the teachers of the district over which he presides.

Manual training is practised in many of the schools, and in some of the high schools the equipment for this purpose is very complete, and the training excellent. In fact one is impressed on every hand with the practical character of the training in the State and city schools generally. Great attention is paid to physical culture in most of the schools. Evening schools, under the city or State authorities, are not so general as in England, but they are now established in some of the more populous centres of the cities and seem to appeal to the young people. The work undertaken is generally of a practical kind.

In New York, during the summer vacation, which is usually much longer than in England, a vacation course has been established for children living in the crowded districts of the city. The work is principally manual, such as sewing, basket work, iron and copper work, leather work, etc., etc. The exhibition of this work done during the last vacation was very interesting, and showed much skill on the part of the scholars.

The New York Board of Education provide a series of public lectures during the winter months ; in character they are educational and recreative, and are intended to help parents who have not had the advantages the children now enjoy to obtain useful information.

There are also a series of popular lectures provided for teachers every week, dealing with subjects of interest to the American citizen. The lectures are illustrated by beautifully coloured lantern slides. In connection with the schools there is no prize system or scholarships, the belief being that educationally such a system is undesirable. (In connection with some of the universities there are a few modified scholarships, but they are not general, and are not encouraged.)

One great difficulty has to be provided for by the school authorities which perhaps does not present itself to any other nation, that is the provision for dealing with the enormous number of children of foreign parents who are constantly pouring into America to find new homes. It was interesting to see the method of teaching these children the English language, and surprising to hear how quickly they acquired sufficient knowledge to enable them to take their places in the ordinary school classes. Great importance is attached to the teaching of the duties of citizenship, and this is emphasised in the schools by the parade of the national flag, which is saluted by

the children as they pass out of the Assembly Hall. National songs are sung in all schools, so that very early in life not only the native born American children, but also the children of foreign immigrants, having had put before them the greatness and possibilities of the nation, soon become imbued with national instincts and aspirations.

Attendance at school is compulsory up to 14 years of age (there is no half-time system), but attendance officers are few in number, so that one might infer that this side of the administrative work is not strictly carried out, but we were assured that the public sentiment in favour of education is so strong there is not so much necessity for the use of official pressure as in England.

The high schools being free, a large number of children pass into them from the grammar schools. But they soon discover that the work is more difficult than they anticipated, or their parents require them to enter on some remunerative employment, and both causes lead to the retirement of a large number during the first year (in New York as many as 45 per cent.) Those who remain for the full four years' course may, therefore, be considered generally to be the children of ability who are able to profit by the instruction, and eventually become a valuable asset, making for the industrial progress and stability of the nation.

In the administration of education there is greater elasticity than in England. There is no Central Department dealing with the nation as a whole. Each State and large city has its independent authority, with a free hand to adopt the policy most suitable for its own particular requirements. The Central Government simply provides a department, presided over by Dr. Harris, at Washington, for compiling statistics, and generally keeping the numerous authorities in touch with one another. The constitution of the education authority in the different areas varies. In the large cities, such as New York, Washington, Philadelphia, and Chicago, the members are selected by the Mayor or other officials, the taxpayers having no direct voice in the election of the board. It strikes one from England as very strange that in a country so essentially democratic as America the people should be satisfied with such an anti-democratic method of constituting the authority having charge of education. In Boston the board is directly elected.

In New York the Board of Education consists of 46 members, one-sixth retiring annually. There are 46 District Committees, who inspect schools, etc., in their respective districts, but they have no administrative powers. The Board appoints the superintendent of education, who has the assistance of eight associate superintendents appointed by the Board on his nomination. These officials practically form the Executive, and exercise a powerful influence in the general and detailed administration of the educational work of the city. All teachers are appointed on their recommendation from an approved list, and in the general management of the various schools they have a controlling voice.

The school buildings are generally good, the newer ones excellent, and the equipment all that could be desired; in fact, the efficiency of the school is the one thing aimed at, and no expense is spared to attain this desirable end.

Many of the schools in the cities are very large, accommodation being frequently provided for 2,000 to 3,000 scholars, and, in some

cases, even more. The plans for the buildings are all prepared by the architect to the Board, and are admirably conceived and carried out. It was interesting to hear that in carrying out the buildings the architect so carefully considers every detail that no extras are incurred, and the school is usually completed within the estimated cost.

The books and materials required in the schools are selected by the superintendent and his associates. A considerable choice is afforded, and the head teacher of each school has some voice in the selection from the authorised list of the particular books most suitable for the respective schools. At present the books, etc., are distributed through a central depôt, but this plan has not been a success, and it is in contemplation to adopt a simpler method.

The salaries of the teachers are all paid from the central office through the head teacher of each school, a separate cheque being made out for each individual teacher. The organisation of this central office, and, indeed, of the whole work of the Board, is excellent. In the matter of organisation we have a great deal to learn from our American cousins, and one feels that it would be a great advantage if many of the new officials recently appointed to organise educational work in our counties could have the advantage of a visit to the offices of the Board of Education in New York.

The free schools are largely used by all classes. The son of the wealthy man sits in the same class with the son of the labourer. In Washington, we saw the son of the President of the United States, two grandsons of the late President Garfield, and many children of members of Congress sitting and working in the same classes as the children of coachmen, gardeners, labourers, etc. Not the slightest difference is observed in regard to these children; they mix in the classes and playgrounds on terms of perfect equality.

Higher education above the free high school is provided by the various technical institutions, colleges and universities. Many of these institutions have been founded and endowed by wealthy citizens of the United States who have realised the great value to the individual and the nation of the highest education. Students who enter these colleges for the full course are required to have graduated at the high school, which is generally accepted as a sufficient guarantee that they have received a good general education as a foundation on which to specialise.

The equipment of many of the technical colleges is excellent, the teaching good, and the keenness of the students very marked. Among many excellent institutions of this class may be mentioned the Pratt Institute at Brooklyn, founded and endowed by the late Mr. Pratt, and now managed by his three sons; the Drexel Institute, and the School of Industrial Art, Philadelphia; the Massachusetts Institute of Technology, Boston; the Armour and the Lewis Institutes, Chicago; the Textile School, Lowell; and many others. Many of the universities and colleges have also received great assistance from the princely gifts of wealthy men, some of them having been built and endowed entirely at the cost of single individuals. Fees are charged at all these various institutions, and after passing successfully through the full course students have

no difficulty in entering with every prospect of success the career offered by the professions or the public and private industrial concerns of the States.

Of the universities I will not attempt to write, as this phase of the educational work will be dealt with by other members of the Commission. There are many excellent colleges provided for the higher education of women. Amongst others we saw Barnard College, New York; Vassar College, Poughkeepsie; Wellesley College, near Boston. These colleges consist of very fine buildings, and the equipment is excellent.

At Washington I had the opportunity of a most interesting conversation with Dr. Wylie, the head of the Department of Agricultural Chemistry. In recent years a great advance has been made in applying science to agriculture in the various States, and there are now many colleges largely devoted to the training of students in this branch of science. There are also observation stations established at many centres. The Central Department at Washington collects and tabulates statistics, analyses soils, seeds, manures, etc., and advises generally on all questions bearing on the subject of agriculture. We were told that as a result of this policy land in the Eastern States which for years had been out of cultivation was now being reclaimed and again becoming valuable.

To review the general impressions received from my visit, the following are the points with which I was specially struck :—

1. The people as a whole believe in the absolute necessity of a good, sound, general education as one of the principal factors in the building up of a successful State, and as a consequence of this belief they are willing to contribute without stint to the building and equipment of the common schools, which are absolutely free to all children.

2. A good general education is generally recognised as the necessary basis for specialising in the higher institutions.

3. The large corporations and heads of industrial concerns recognise the value of well-educated men who have made a special study of some branch of science applicable to the industry they intend to follow. The demand for such young men is always in excess of the supply, and is increasing. As a consequence, there is a desire on the part of the students to equip themselves to meet the demand, which cannot but materially add to the efficiency of the industrial life of the nation. A spirit of hopefulness is apparent in the high schools and colleges, which shows itself in application and attention, and a general keenness to make the best of the opportunities offered.

4. Education is, as far as the public are concerned, treated on its merits; there is no acute religious question obscuring the great issues involved.

5. The organisation of secondary education on a broad and liberal basis and as part of the public school system results in a better prepared class of students entering the higher institutions than is generally the case in England. In this branch of education the United States have adopted a wise policy, whilst in England we have not yet sufficiently recognised its importance.

6. Generally the American system is more practical than the English.

7. There is nothing in America quite to compare with our great public schools and Oxford and Cambridge Universities.

8. The predominance of female teachers throughout the city and State schools is very marked, and it is a question whether, as far at least as the boys are concerned, it would not be better to offer inducements to bring more men into the profession. At the same time one could not fail to be impressed with the character, ability, and bearing of the female teachers generally. They are a great power for good.

In conclusion, I should like to express my personal thanks to the authorities wherever we went for their great kindness and attention. The hospitality we received on every hand will never be forgotten by any member of the Commission. I trust that Mr. Mosely's public spirited action in organising and bearing the cost of the Commission may result in much good to education in England.

ARTHUR ANDERTON.

Mosely Educational Commission.

Report of Professor HENRY E. ARMSTRONG, Ph.D., LLD., F.R.S.

The places visited by me as a member of the Commission were New York, Baltimore, Washington, Cleveland (Ohio), Buffalo, Ithaca (Cornell University), Boston, Yale and Middletown (Conn.). But on a previous occasion, six years ago, when I was three months in the country, I crossed the American continent twice from East to West, including the journey from Montreal to Vancouver by the Canadian Pacific Railway. I then spent a considerable time in the West and saw much of Chicago, as well as of Minneapolis and the great wheat region in the north-west. As a student, I was brought much into contact with Americans; this has led me always to take a special interest in them and I have all my life been a close observer of American scientific work. Any opinions that I may have formed are, therefore, something more than mere impressions derived from my recent brief visit.

It is very difficult to evaluate the part which school education plays in the United States of America. That it plays a real part cannot be doubted; but there is clearly a tendency somewhat, if not greatly, to exaggerate its relative importance as a factor in the national welfare. In point of fact, American cuteness would seem to be conditioned by environment rather than by school education. The country was settled by adventurous, high-minded men; the adventurous and restless spirits of Europe have been attracted there for generations past; the conditions have always been such as to develop enterprise and to stimulate individuality and inventiveness: so that, during the whole period in which the continent has been gradually acquired and settled on, there has been a constant invigourating struggle going on against nature in one form or another, the Indian probably having played no mean part in the education of the race. Such being the case, it is important to remember that some at least of these influences are now withdrawn and that development may, in consequence, be along different lines in future, especially as the enervating influence of machinery is also coming into play more and more.

In some respects, the Americans may be said to be a distinct if not an improved breed. Certain proclivities have undoubtedly been unconsciously selected out, and there has been much cross breeding; hence a race has been developed differing in important respects in its type of thought, if in no other way, from those represented in Europe. Moreover, success has given them belief in themselves and leads them to trust themselves. The natural resources at their disposal are boundless and their outlook is extraordinarily hopeful; they are born optimists, in fact. They have also learnt to work together and to accept and support party rule; they seem, indeed, to tolerate direction and to subordinate their individual opinions to

an extent which we have difficulty in believing possible—so much so that they may be said to lack individuality. Willingness to organise and to be organised is almost characteristic of the nation. Uninfluenced by tradition, they are eminently receptive—always ready to consider and test new ideas; nevertheless, the conservatism characteristic of a young country is in many ways still manifest among them.

It is difficult to trace the development of any American peculiarities to the schools—or to find any evidence even that the schools seek to utilise and develop the national idiosyncrasies.

After seeing a number of schools in detail—both common schools and public high schools—it seems to me that they are much as our schools; that the problems they are seeking to solve are our problems; that their difficulties are our difficulties. In matters of organisation and administration, we apparently can learn many things from them; but, as regards method, it seems to me that we have very little to learn; indeed, in depth of purpose and originality, our best work may not unfairly be said to be considerably in advance of theirs. But whereas here we have no general belief in education, in America the common school system is universally held in high esteem and its influence is very great. The mere fact that all classes are brought together in the common school is in itself of the utmost importance as affecting the social outlook; even those who prefer to send their children to private high schools seem to think it desirable that they should first attend the common school in order that they may consort with others.

The belief in secondary education, especially for boys, is far less general—it is probably no greater than ours—and yet, it seems to me, that it is by the existence of a well-developed public high school system that America is distinguished most from us, and potentially placed most in advance of us.

What has until recently counted as university education here is almost unknown in America. What will count as university education here ere long, as the various provincial universities become effective, is already developed in America to a considerable extent and is advancing with giant strides. The support of university education is become a fashionable practice among multi-millionaires, and the appreciation of such education by employers generally has reached a point as yet undreamt of here and is growing rapidly, owing to the establishment of an effective working connection between the manufacturing industries and the colleges. The belief in higher education may be expected to grow at a compound interest rate. This, it seems to me, is the great fact to be taken note of, if—as we undoubtedly must—we are to regard education as an effective means of promoting national welfare. It will undoubtedly force on the development of the public high schools. But, as I shall have occasion to point out, American education is for the most part still governed by eminently academic and conservative traditions; in some respects it lacks depth and practical outlook to a strange extent.

The movement which has led here, during the past 20 years, to the erection of technical schools all over the country and of the numerous polytechnics in London is only beginning to come into evidence in America. Evening class instruction, such as has grown up under our Science and Art Department, is almost unknown there.

In New York and other large towns we saw many fine public school buildings. But if buildings are to be regarded as evidence of appreciation, we may point to those erected by School Boards all over this country; it is probable that in size, number and appointments they compare not unfavourably with those to be found in America, taking into account the areas dealt with. The building, it must not be forgotten, appeals to the public sense: it can be pointed to with pride. This is distinctly the attitude adopted in America towards the public school buildings. I am not aware that we take particular pride in the erection of our Board schools: it is rather our habit to grumble at the outlay they involve.

THE COMMON SCHOOLS.—In interior arrangements even the most modern schools are not superior to our own. And there is even less attempt made in them to provide pictorial decoration. Thring's great doctrine of *thinking in shape* has, if possible, made less advance thus far in the American common schools than in ours.

Much has been said of the importance attached in the American schools to the teaching of patriotism and to the practice of saluting the flag which prevails in them. This involves the recitation occasionally of the formula: "I pledge allegiance to my flag and to the Republic for which it stands—one nation, indivisible, with liberty and justice for all." This appeared to me to be a somewhat perfunctory exercise when I witnessed it. Thinking Americans with whom I discussed the question seemed to regard the practice as of some value in cities like New York and Chicago, where a large alien element has constantly to be absorbed into the population; but apparently they were of opinion that it was undesirable as a general practice.

It is almost unnecessary to say that the amount of attention paid in the common schools to reading and composition is in no way sufficient or satisfactory, the neglect of English among English-speaking people being proverbial. Apparently no greater effort is made in the American schools than in ours to lead children to read and to become really fond of reading.

The teaching of drawing is also undeveloped. Simple measurement work in association with drawing, which is being so much advocated here and which is gradually assuming importance in our schools, seems to be almost, if not quite, unknown. I did not learn that the attempt was being made anywhere to put the teaching of arithmetic on a practical commonsense basis.

Although manual training figures in the programme, the interpretation put upon the term seems to be very different from that which is usual here, drawing commonly counting as manual training. In some of the schools, where space permits, woodwork is introduced into the upper classes for boys, and cookery and needlework for girls. The belief in such work is evidently growing; but at present the schools are undoubtedly behind ours in promoting it and even more bookish than ours in their tendencies.

The Nature study lessons I witnessed, when not specifically botanical or zoological and scientific in character, were eminently superficial and worthless.

As all classes attend the common schools, these cannot be compared directly with our elementary schools, but must be thought of in connection both with these and with all other types of preparatory schools.

There are two striking features in them—the air of refinement due to the attention paid to dress, especially by the girls, the preponderating element in most classes; and the attitude of familiarity assumed by the class towards the teacher. Distinctions such as poverty or occupation might well condition even in a democracy are scarcely perceptible. In America the teacher does not seem to be regarded as the natural enemy of the boy—as a person to be circumvented. The method of teaching which appears to be generally adopted involves, as it were, the constant exchange of opinion between teacher and pupil—not, as is here the case, either the communication of information to the class by the teacher or the mere wringing of what is supposed to have been learnt from the pupil by the teacher. The method has both its advantages and its disadvantages. It develops that readiness of address which characterises young Americans and leads children to give their opinions freely—far too freely many think—on all sorts of subjects; and it encourages cuteness. But it imposes a very heavy burden on the teacher and operates against close study and concentration of attention. In American schools there is no enforcement of discipline by means either of penalties or of prizes. Children are put on a footing with grown-up people and treated as young Republicans.

How, then, is discipline maintained? Is it always? Perhaps the average American boy has not such a fund of animal spirits as the English boy—he is sprung from a tolerant race and from an early age tends to ape the behaviour of his elders more than the English boy does. Certainly one great cause of good behaviour is the presence of girls along with the boys. On the occasion of my former visit, I discussed with one of the chief inspectors in Washington the reasons why the system of mixed classes had been abandoned there and then resumed. I learnt that one of the possible reasons was that it had been found difficult to keep the boys in order when alone. But undoubtedly the chief hold teachers have on their classes is consequent on their maintaining the interest of the pupils. Many of my colleagues on the Commission—not teachers—in fact, expressed the opinion on more than one occasion that the teaching was most interesting. But looking below the surface I did not feel satisfied with all that I witnessed. Whilst every teacher will admit that it is necessary to create interest, we all know that it is not always possible to maintain this at bursting point and that in school, as in the world, uninteresting work must be done sometimes; that, in point of fact, it is most important to acquire the art of doing uninteresting work in a serious and determined way. The American system seems to me to be one which imposes a fearful strain upon the teachers—especially as they are mostly women. And it has some serious consequences. One of these is inability to concentrate the attention. Everywhere the heads of the high schools complained that the pupils who came from the elementary schools could not concentrate their attention upon their work. Several were of opinion that under the somewhat more rigid conditions of the high school improvement in this respect gradually took place as the pupils moved up. On the other hand, in more than one case it was admitted candidly by the head teacher of the elementary school that the extent to which the children could concentrate their attention diminished as they grew older and passed up the school; thirty minutes, we were told, was the longest period during which boys could concentrate their attention and work effectively. This failing, I believe, is not unknown in our own schools.

PUBLIC HIGH SCHOOLS.—Although we have no schools which are the precise equivalent of these, some of our higher grade elementary schools come very close to them in many respects. It is noteworthy that, in a city like New York, few who can afford to send their children to private schools make use of the public high school—one chief reason assigned being that the classes in the latter are so large that individual pupils cannot receive sufficient attention. Of those who enter, in New York, about 50 per cent. (mostly boys) leave during the first year to go into business; under 10 per cent. remain until the fourth year. It is said that a much larger proportion are retained in the schools in the Middle West.

In common with all my colleagues, I was favourably impressed by the way in which English literature was taught, but I could not discover that the teaching was carried to a logical end and fondness for reading inculcated.* I found no more evidence that proper attention was paid to writing and English composition than in our schools; the subject which of all other is of primary importance seems to be equally neglected in both countries. I met with no proper attempt to correlate the English composition with any of the practical work:

In the teaching of mathematics and science, the American high schools seem to me to be considerably behind our best schools. I came across little evidence that the practical methods of teaching mathematics and geometry which are coming into vogue here are appreciated; and the old academic methods of teaching science seem to prevail almost exclusively. No proper foundation for such work is laid in the elementary schools.

In one respect there has been an important departure: the recognition of the value of manual training has led to the development of a special manual training department and, in some cases, of distinct Manual Training High Schools; in the latter, manual training takes the place of classics. In some cases, perhaps the majority, these are tending to develop into trade schools and to aim at proficiency in wood and metal work; they are elaborately equipped with tools. Nominally, they profess to regard the manual work from an educational standpoint, but it is quite clear that in most cases the will passes for the deed and that the teachers are not competent to develop the subjects pedagogically.

But we met with one most remarkable exception in the Brooklyn Manual Training High School. The head master of this school, Mr. Larkin, has conceptions of the educational possibilities which manual training may afford which place him on a special plane. His school at present is very inadequately housed. New buildings, however, are to be provided, and it is to be hoped that these will not be so palatial and ornate as to destroy the true workshop-like character and atmosphere of the cramped quarters in which the work is now carried on. In the first year the boys do woodwork; in the second, metal work—chiefly forging; in the third, printing; in the fourth, machine-tool work. The second year work was in the hands of a man of exceptional ability, not merely a smith but an artist, so that the imagination as well as the mechanical aptitude of the boys

* In the new Morris High School in New York—a magnificent building to accommodate nearly 3,000 pupils—a very fine library will be provided. The head master told us that it was his intention to develop the use of this systematically and that many duplicates would be provided of important books. A feature in this school will be a permanently darkened class-room with electric lantern, etc., into which classes can go to witness lantern demonstrations in connection with geography lessons, etc.

was being well developed. The printing was in charge of a master who also taught chemistry in the school—an enthusiast who had mastered the art of printing and was teaching it *con amore*. Ocular demonstration of his persuasive powers was afforded by the presence in the workshop of a valuable linotype machine, which he had induced the makers to present to the school. We met with another man of this type teaching woodwork at a high school in Washington. He had been educated in the school and, perceiving the importance of the subject, had served for several years as a pattern-maker in the Navy Yard at Washington; then he had returned to the school as a teacher.

It is men such as these that are needed to put manual training on a proper footing—and it is all important that we should devise means of attracting such men into schools.

The introduction of printing as a school subject may appear altogether absurd, but Mr. Larkin gave us clear evidence in proof of its value. Not only, he argues, is it of importance as a manual, mechanical exercise, as the means of bringing lads into contact with a set of facts outside ordinary experience, as well as of familiarising them with all that is involved in the production of the books they read, but it is also of value on the literary side. When lads are called upon to set up in type and print off something that they have written and to correct the proof, they begin to realise, in a way which is rarely done by the mere writer, how careless they have been in writing, how poor their style. We were favoured with copies of a journal produced in the school—printed and illustrated there—which certainly gave evidence of great skill. Mr. Larkin has a true conception of the educational possibilities afforded by proper manual training: while deprecating the attempt to train up skilled workmen as tending to stereotype the teaching, he sees very properly that it affords opportunities both on the mechanical and artistic side for general culture and that it may be made a most important adjunct of the literary and scientific work. Had I enjoyed no other opportunity than that of meeting him and of learning his views, I feel that my visit would have been a fruitful one.

But elsewhere I found an almost absolute lack of imagination underlying the manual training work—vague ideas of possibilities but neither real understanding nor sufficient executive power—although technically much of it was excellent.

It may be hoped that Manual Training Schools—both primary and secondary—will soon be established here in which at least half the time will be spent at experimental and manual work. There is no more important experiment to be made in education than that of determining the value of such schools. In these schools a whole floor at least should be fitted up as a workshop and every kind of manual work should be carried on, so that there might be *unlimited manual temptation* in the path of the scholar, who should be free to attempt anything that he liked without following a routine course.

SCHOOL MANAGEMENT.—It is generally known that the American school system is very ineffectively controlled at the present time and that it is too often dominated by political influences. This is well brought out in a recent article in the *Forum* for October to December, 1903. In New York, both the elementary and the high schools are controlled by an able City Superintendent, who has a

staff of inspectors under him, and all appointments are made on a Civil Service basis ; but a year or two hence, I believe, a Tammany-appointed inspector may be his successor. All the schools work to programmes authorised by the Superintendent, one programme being laid down for the elementary, another for the high schools. The latter, however, is based on the elective system, a considerable range in the choice of subjects being allowed. There is no doubt that this system is subject to considerable abuse and that "soft options" are much in request. It is beyond question most desirable that special aptitudes should be developed and that teachers should be in every way mindful of these ; but boys and girls cannot always be judges of what is good for them, nor have they the necessary worldly knowledge to settle for themselves. The Americans do not seem to have settled any more than we have what are the necessary elements of a rational course of school study.

As they work to a common programme, both the freedom of the high schools and the responsibility of their directors is limited in a way altogether unknown here, perhaps to an unfortunate extent. Given an ideal superintendent with an ideal staff, the system might work well. But no special effort is made or is likely to be made to secure such an ideal executive ; yet it should be aimed at. The combined intelligence of the teachers must be in excess of that of the executive and it should be brought more into operation ; unless the Americans desire to stereotype all teaching, they must be prepared to grant almost absolute freedom to their teachers. This does not preclude either the holding up of example or fair criticism. Both here and there the spirit of co-operation needs to be brought effectively into action. Our Education Department hitherto has had no Intelligence Department ; it has had no clearly thought-out, definite educational policy ; there has been no effective means of keeping the inspectorate informed on all matters relating to educational method and no recognised means whatever of securing exchange of opinion and discussion either among the inspectors themselves or between them and teachers at large. The work of education has been carried on in holes and corners into which outside influences have penetrated with difficulty. In both countries we need to organise the work on a scientific basis : there should be some conscious effort made to substitute the good for the bad and even for the mediocre.

FEMALE TEACHERS.—Most of us who are conversant with school work were struck by the distinctly low average of attainment in the American high schools. To what is this attributable ? In part probably to the conditions which prevail in American life ; but in large measure also, I venture to think, to the prevalence of mixed schools and the preponderance of women teachers.

Admitting that it may be possible, even desirable, to bring up the two sexes together in the earlier years of school life, I venture to think that we must sooner or later come to admit that it is wrong to do so during the later years, if the object be to develop a virile man. To put the matter in very simple terms, it seemed to me on the occasion of my former visit—and the impression was confirmed during my recent visit—that the boy in America is not being brought up to punch another boy's head or to stand having his own punched in a healthy and proper manner ; that there is a strange and indefinable feminine air coming over the men ; a tendency towards a common, if I may so call it, sexless tone of thought.

But if co-education be bad in itself, it becomes infinitely worse when the teachers are mostly women; they should rather be men mostly. Nowhere is the claim on behalf of women to equality with men put forward so strongly as it is in the United States. Nowhere, I believe, would it be found to be more disproved in practice, if carefully inquired into. Women have sought in recent times to prove that they can compete successfully with men in every field; they claim to have succeeded, but the claim cannot be allowed, I think. They have shown—that it was unnecessary to show—that they are indefatigable workers; and they have shown that they can pass examinations with brilliant success. But what has been the character of the examinations? Almost invariably they have been such as to require the reproduction of learning, not original effort. History records but very few cases of women with any approach to originality; it proves the sex to have been lacking in creative and imaginative power. Those who have taught women students are one and all in agreement that, although close workers and most faithful and accurate observers, yet, with the rarest exceptions, they are incapable of doing independent original work. And it must be so. Throughout the entire period of her existence woman has been man's slave; and if the theory of evolution be in any way correct there is no reason to suppose, I imagine, that she will recover from the mental disabilities which this has entailed upon her within any period which we, for practical purposes, can regard as reasonable. Education can do little to modify her nature. The argument is one which women probably will not, perhaps cannot, appreciate. No better proof could be asked for, however, than is afforded by the consistent failure of women to discover special wants of their own—they have always merely asked to have what men have, to be allowed to compete with men. Domestic subjects have been taught in the most perfunctory manner possible.

Among the colleges we visited was that at Vassar—the chief college for women in the States. It accommodates some 900 students. The college is located amidst surroundings in full harmony with the grace of the inmates: their charm of manner overcame us completely, even in the brief period during which we were privileged to fraternise with them. The teachers are mostly men. The instruction is given entirely on academic lines: lectures are delivered on economics but I could not discover that woman's work in the world—'domestics'—was considered in any specific way: it would come, I was told, under the head of technical education, which is eschewed. Apparently no use is made of the beautiful grounds in which the buildings are placed for Nature-study or instruction in horticulture; as one of my companions remarked, Nature is looked at only in the laboratory down a microscope tube.

In some of the Western co-educational colleges, arrangements have been made to provide for woman's specific requirements, which have given great satisfaction, I am told; but this has been done at the instance of the men teachers.

The women teachers in America, it seems to me, are less likely than ours are to take a feminine point of view in instructing girls. The general environment seems unfavourable to the development of domestic tastes.

From the point of view that I have ventured to advocate, women teachers must be, for most purposes, relatively inefficient; and as

teaching is an occupation in which more than any other imaginative power, individuality, insight and originality are wanted, it is important that men rather than women should exercise the predominant influence. If it be the province of education to mould the race, there is no other question of greater importance claiming our attention at the present time—especially as the difficulty of obtaining male teachers is increasing day by day. In both countries it is imperative that we should discover means of attracting men with practical instincts and of superior mental gifts into the teaching profession.

THE TRAINING OF TEACHERS.—The elementary schools, at least in the larger cities, enjoy an advantage over ours in that, I believe their teachers usually all pass through a period of high school training prior to entering the normal or training school; their outlook is consequently, on the average, somewhat broader. The methods adopted in training teachers appear to be no less academic than ours.

The premier training establishment at the present time is the Columbia Teachers' College, New York—a palatial establishment. The teaching given in this college is in part academic, in part professional, the predominant class of student being those who are training to become supervisors, *i.e.*, advisory or teaching inspectors.

I had hoped to find that in this college the academic training had a certain bias imparted to it, just as at our Cambridge a certain professional bias is given to much of the academic training of those who graduate in the engineering tripos. But I was disappointed. And I was also greatly disappointed by what I heard when attending some of the pedagogic classes: there was a high-flown air of unreality about the instruction; too much precept, too little practice; no really severe practice! The whole building seemed to me to be out of character with the work to be done: far too ornate; and the students—mostly women—looked far too respectable and tidy to please me. If they had been men I should have said that they needed to take their coats off and not to be above making their hands dirty. It does not seem likely that teachers so trained will be able to give the simple, practical, commonsense instruction that boys and girls stand so much in need of at the present day. The whole appeared to me to be a good illustration of the tendency that I seem to see in America to be guided by sentiment and emotion, and to work on academic rather than on practical lines. I do not think that the Americans can long claim to rank as a practical nation if such methods are allowed to prevail.

We have sinned and are sinning grievously here in the same way, but there are clear indications that we have recognised our mistake, and that we may shortly enter upon a new era in which commonsense will prevail. I saw no such signs in America.

COLLEGE AND UNIVERSITY INSTRUCTION.—Even if it were necessary it would be difficult to arrive at any consistent definition of the American college; but as a rule it may be said to aim at giving a liberal education rather than professional training. Where colleges or schools for both purposes exist, side by side, they together constitute the university. It is noteworthy that, with a few exceptions, the term university has only recently met with general application: Yale College, for example, obtained the right to call itself Yale University only in 1887.

The college and university instruction, including that given in technical schools, is of interest to us at the present time from several points of view.

In the first place, in America, as here, great complaint is made that students come to college ill-prepared to do the work*; that games† occupy too large a share of attention; and that the bonds of discipline have been unduly slackened of late years.

Moreover, it is said that those who have been brought up in towns are not such satisfactory students as those who have been brought up in the country. The latter are not only more earnest but more practical. On this account the spirit prevailing in some of the western colleges is said to be far better than that met with in many eastern colleges.

Although the elective system prevails very largely in those cases in which graduation from college is a necessary preliminary to professional study, the course is prescribed. It is very noteworthy that the course laid down is a broad one. Thus at the Johns Hopkins University, the following are the subjects prescribed in the chemical-biological or preliminary medical group:—

First year :	Physics	9 hours weekly
	Chemistry	9 " "
	Rhetoric	3 " "
	English Composition	4 " "
Second year :	Chemistry	9 " "
	Biology	9 " "
	French	4 " "
	English Literature	3 " "
Third year :	Biology	9 " "
	Philosophy	5 " "
	History and Economics ...	4 " "
	Elective Course	2 " "

English composition and reading, French and German, as well as Economics, are included in all the complete Engineering and

* Professor J. J. Stevenson, of New York University, deals in a very outspoken manner with this question in the recent January number of the "Popular Science Monthly." To quote a few sentences from his article: "The old adage says 'he who would command must first learn to obey.' That American lads are sorely in need of such training is only too evident. . . . Such training means—training to think, to reason. Lads too often fail to receive this training in secondary schools, as any instructor who has had to deal with freshmen can testify. Secondary schools to-day are little better than cramming houses to fit pupils to answer odds and ends of questions in papers for entrance examinations. Loose thinking and restlessness under restraint characterise the American students in the lower classes at college; lack of home training may be responsible in part for the latter characteristic, inferior teaching in secondary schools for the former."

† The report of the President of Harvard College for the year 1901-1902 contains for the first time the report of the Chairman of the Committee on the Regulation of Athletic Sports. President Eliot's comments thereon are highly instructive: "This report is interesting from several points of view. It exhibits, in the first place, the large number of students who are actively engaged in the competitive sports taken together. The figures given are not accurate, but it is reasonable to suppose that at least two thousand students out of the thirty-hundred in Cambridge take some active part in one or more of the thirteen sports in which an enumeration of the number of participants was made. . . . The chairman calls attention to the fact that the expenditures for football are steadily increasing. A quarter part of all who take part in this sport are injured enough to lay them up for ten days on the average, and a much larger proportion of those who really play the game are thus injured for the season. The changes in the rules during the past ten years have tended to increase the number of injuries rather than to diminish it. The temporary injuries are so numerous that it is impossible to count on putting any particular eleven men into an important game on a given day. In order to provide the necessary number of substitutes for each place, the football squad often numbers sixty men. Hence large expenditures. The outfit for candidates grows more expensive, because they wear about fourteen pounds weight of padding and armour. On the whole, the game, under the existing rules, tends to become slower and less visible in its details, and therefore less interesting. Moreover, the ethics of the game, which are the imperfect ethics of war, do not improve. The martial axiom—attack the enemy's weakest point—inevitably leads to a deliberate onslaught on the cripple or the convalescent in the opposing line; and the habitual violation of rules, if penalties be escaped, is regarded by many as merely amusing."

Science Courses at the Case School of Applied Science, Cleveland, Ohio. The same practice is followed at the Massachusetts Institute of Technology, where, in addition, history (American and European) figures in the programme. In these institutions the course lasts four years. The course of reading prescribed in the Case School is an instructive one.

I inquired specially into the teaching of English composition. At the Massachusetts Institute the instructor was taking the utmost pains to select themes likely to interest engineering students; but the possibility of directly correlating the laboratory work with the literary work had not been contemplated.

It appears to me that we may well take a leaf out of the American book and introduce an element of literary study into our engineering courses; but when the question is considered, I trust we shall endeavour to correlate the literary work very closely with the practical work. I did not discover that American students are any more willing to read studiously than ours are.

In most American colleges the arts course occupies four years; in a few only is it possible to graduate in three years. At Harvard College, where the subject of the length of the course has long been under discussion, it has recently been determined to allow students to attain the Bachelor of Arts degree in three or three and a-half years, instead of four years; but owing to the improvement in the courses of instruction it will be possible to require from candidates who obtain the degree in the shorter period evidence of higher scholarship than has been expected of their predecessors at the end of four years. The arts course at the Johns Hopkins University extends over three years; but the standard of matriculation is said to be considerably higher than that maintained by institutions which require a residence of four years. The question whether the professional schools of the universities shall require a degree in arts or science from all candidates for admission is now being much debated. There is clearly a strong desire to raise the standard. This is well expressed in the following passage from the report made by President Eliot, of Harvard, at the close of 1902:—

“Since the wise and efficient conduct of American affairs, commercial, industrial and public, depends more and more upon the learned and scientific professions, the universities owe it to the country to provide the best possible preparation for all the professions. This best possible preparation can only be given to young men who up to their 21st year have had the advantages of continuous and progressive school and college training.”

President Eliot gives the following table showing the proportion in nine universities in which law and medical students holding a preliminary degree stand to all students:—

Universities.	Holders of a Preliminary Degree.	Whole number of Law and Medical Students.	Per cent. of Holders of a Preliminary Degree.
Harvard	886	1,134	78.1
Columbia.....	562	1,260	44.6
Pennsylvania	331	928	35.6
North-Western	220	691	31.8
Michigan.....	216	1,367	15.8
Yale.....	119	398	29.9
California	118	269	44.0
Chicago (Med.)	100	325	30.7
Cornell	75	607	12.8

Harvard University "has definitely determined to pursue the policy of requiring for admission to its professional schools a preliminary degree and has already applied this policy in all its professional schools except the Dental School. The result has been an improvement in its professional schools striking in proportion to the strength of the contrast between the former students and the present in regard to their previous training."

At the Johns Hopkins University, candidates for the degree of Doctor of Medicine must be college graduates or must give evidence by examination that they possess attainments indicated by a baccalaureate degree in arts or science. Entering college at 18, the student is 21 or 22 years old on commencing this course of professional study; he is, therefore, at least 25 or 26 at the conclusion of the medical course. A period of post-graduate instruction at home or abroad is then often entered upon. It is not unlikely that the example set by law and medicine will ere long extend to other professions. The undue length of the course of study thus arranged has naturally attracted attention. Recently President Murray Butler, in particular, has commented on it and has proposed a further curtailment of the course. There are instances of such curtailment already. Thus at Cleveland, Ohio, where the Adelbert College and the Case School of Applied Science exist side by side, each having a complete four years' course, it has been arranged to give a double degree at the end of five years to those who have spent three years in the college and then two years in the school of applied science. President Butler proposes that the B.A. degree given at the end of a two years prescribed college course shall be made the condition of entry to a professional course. He would give the M.A. degree to those who have followed an arts course during four years.

It is remarkable that a people supposed to be practical, like the Americans, should be prepared to devote so long a period to study. I had many conversations on the subject, in which I expressed my surprise; but I must confess that, as a rule, my friends seemed surprised that I should take up such an attitude. I am almost led to doubt whether, in matters of education, our American cousins may justly be regarded as a practical people. A course of study prolonged to an age bordering on 30 rather than 20 implies a most serious limitation on the period during which the individual exercises independence; it casts an improper burden on parents; and it postpones the age of marriage unduly. This last point especially deserves some consideration. The following table, given by President Eliot in his report, records the number of surviving children of members of six classes graduated from Harvard, from 25 to 30 years after graduation:—

Class of	Number of A. B.'s	Number married.	Number of children surviving 1902.
1872	114	82	165
1873	131	96	181
1874	165	124	247
1875	141	90	171
1876	142	106	212
1877	188	136	286
	881	634	1,262

He points out that:—

"If it be assumed that the surviving children are about one-half males, it follows that the six classes have by no means reproduced themselves; that they have, indeed, fallen 28 per cent. short of it. Twenty-eight per cent. of the members of these classes are unmarried; and those who are married have, on the average, only two surviving children; so that the married pairs just reproduce themselves on the average."

It is impossible to overlook the significance of such facts. Again, to quote President Eliot:—

"The table suggests that the highly-educated part of the American people does not increase the population at all, but, on the contrary, fails to reproduce itself. If many other colleges and universities publish class reports analogous to the Harvard reports a competent statistician might establish from the assembled reports some interesting and important conclusions. It is probable that the regrettable result indicated in the table is due in part to the late postponement of marriage on the part of educated young men, a postponement which the protracted education now prescribed for men who enter the learned and scientific professions makes almost unavoidable. The young physician, lawyer, engineer, or architect is now fortunate if he marries at twenty-eight or twenty-nine; whereas he should have married at twenty-five or twenty-six. To make earlier marriage possible is one of the strong inducements for bringing to an end the school course at seventeen or eighteen, the college course at twenty or twenty-one, and the professional training at twenty-four or twenty-five."

Our blind belief in academic methods of training has perhaps led us to overlook yet other all-important reasons for shortening the courses. While at college or technical school the student is not only withdrawn from the world of experience—and that, too, during the most susceptible period of youthful freshness—but is always dominated by teachers; the time is so entirely spent in learning from others that there is no possibility of properly developing either imaginative power or individuality. Therefore, not only is physical power sacrificed but mental procreative power also—this latter surviving only in the genius; whereas, in reality, if education were of true avail, its one great and chief office should be to call forth and develop whatever spirit of originality, whatever element of genius, may lurk in the mind.

Overteaching seems to me to be the bane of American schools of every grade, even more than of ours. And there is grave danger, especially in America, that the work of education may be over-organised. Classes are being formed to give special instruction in every section of every subject; in consequence much time is wasted in doing formally what might be done far more rapidly and effectively informally when occasion requires, under intelligent direction or with the aid of properly-written instructions.

It would almost seem that higher education is being given mainly in the interests of those who are to occupy secondary positions. The industrial leaders in America, it is said, are mostly men who have not enjoyed the so-called advantages of a liberal education. They are men with minds unfettered by the traditions which education, as now given, is only too likely to impart, yet trained in the world of experience, possessed of commonsense. But there are exceptions which show that training in scientific method may be of advantage: a number of the men now at the head of the metallurgical industries commenced their career as chemists—not as engineers, be it noted.

The entire system of education, both here and in America, seems to require reconstruction from bottom to top; it would be well, if I may say so, if we could scrap the whole wretched academic show and start afresh, in order that it may be greatly improved in quality and shortened in duration. Two ideals should be kept in view—we

should aim at the development of individuality and encourage productivity. If a proper foundation were laid during early years a vast amount of time would be saved later on: if children were taught really to read, if they were thoroughly practised in the rudiments of scientific method, if they were even allowed to remain

“ Perplex in faith, but pure in deeds,”

there would be little that they could not afterwards accomplish within a reasonable time, because honesty of purpose would prevail among them and they would work with understanding and resist all but necessary guidance. The greater part of the work which is now done—far too late—at college might then be done at school; or, still better, college might be entered with advantage at sixteen. We need to remember that, as Buckle tells us, the acquisition of fresh knowledge is the necessary precursor of every step in social progress, and must itself be preceded by a love of inquiry and, therefore, by a spirit of doubt. One great reason of failure is that nearly all our teaching is dogmatic. To use Tennyson’s words:—

“ There lives more faith in honest doubt,
Believe me, than in half the creeds.”

We need to introduce broader and more philosophical conceptions into our educational practice: it is almost impossible to keep pace with the growth of knowledge and absurd to add perpetually to the burden imposed upon the student. Moreover, it is unnecessary. If more attention were paid to teaching principles and their application, less to mere facts, many of the difficulties with which the student’s path is now strewn would disappear and he would do effective work; our higher education is unfortunately afflicted with the disease of fact-megalomania; if the meaning of one-tenth of the facts we now lay before the student were properly taught the remaining nine-tenths might safely be jettisoned.

As a very large number of American teachers have studied in Germany and the teaching is often based on German models, it is remarkable that the university system should bear so little resemblance to that of Germany. As a rule, far more routine work is done and far less attention is paid to research work than in Germany. At Cornell University, for example, although the course laid down for students of chemistry covers four years, no thesis work is demanded. At the Johns Hopkins University, on the other hand, the graduate student who desires to take the Ph.D. degree follows a course almost precisely similar to the German course; but this comes after a two years’ graduate course, which has no equivalent in the German system. Of late years, however, much attention has been given to research work in America; still, it is not yet rated at its proper value and those who are engaged in the work by no means enjoy the esteem they deserve on that account. Professor Richards, of Harvard, for example, a chemist of brilliant originality as well as an extraordinarily exact worker, was not appreciated by his university until after he had been “called” to Göttingen. Work which has no commercial aim or value is not easily recognised as important. As the spirit of inquiry is the mainspring of progress, its cultivation should be a first charge on the bank of Education: Germany has long recognised this to be the case, but neither in the United States nor here does such a conclusion yet meet with acceptance. As the prizes offered by industrial enterprise are most alluring, it is essential that more

active measures should be taken to develop the capacity for research, so that a larger supply of competent investigators should be forthcoming. And such men are sorely needed to act as leaders in every grade of education.

SCIENCE IN THE SERVICE OF THE STATE.—The most striking illustrations of American organising ability are to be met with at Washington. So far as I am aware, there is nothing anywhere to compare with the way in which science is being utilised in the service of the State by the U.S. Department of Agriculture, which is located in the capital. The origin and development of this Department is sketched in a separate bulletin published in 1898. It was established by an Act of Congress approved by President Lincoln, May 15th, 1862. Up to July 1st, 1897, it cost, all told, 26,915,988dols., or less than 500,000dols. a year.

The Department now comprises the following branches:—

- Office of the Secretary.
- The Weather Bureau.
- Bureau of Animal Industry.
- " " Plant Industry.
- " " Forestry.
- " " Chemistry.
- " " Soils.
- " " Statistics.
- Division of Entomology.
- " " Biological Survey.
- " " Accounts and Disbursements.
- " " Publications.
- Office of Experimental Stations.
- " " Public Road Inquiries.
- Library.

Agricultural experiment stations have been established in each State of the Union under the Hatch Act of March 2nd, 1887. Agriculture is also supported by the endowment of agricultural colleges under the Morrill Law of August 30th, 1890, out of funds arising from the sale of public lands. A list of the agricultural colleges and experiment stations, together with particulars as to courses of study, etc., is given in a separate bulletin (No. 122) published by the Department. The organisation of the Department in 1903-4, together with a brief statement of the work of each division, is to be found in a special circular (Division of Publications Circular No. 1). Full particulars as to the appropriations for the current year are contained in the Act (Public No. 158). A year after its organisation its entire force consisted of 29 members, mostly clerks. On July 1st, 1902, the staff numbered 3,789, of whom 1,209 were executive officers, clerks and messengers, 2,081 scientific investigators, and 499 labourers.*

The Agricultural Department in Washington is not merely an office—it is also a busy hive of research. A large number of laboratories are attached to it, in which investigations are being carried on, bearing, in one way or another, on problems in agriculture. Much research work is also done in the State Experiment Stations; in the main, however, these serve to bring under the

* Since this report was in type I have received summary reports of work done in various bureaus of the Department: I owe them to the kindness of their several chiefs. It is impossible now to notice them in this report, but I trust to be able to deal with them specifically elsewhere.

notice of farmers the importance of science to agriculture by demonstrating the value of methods of cultivation, manures, etc. There is no question that the research work done under the auspices of the Agricultural Department and in the experiment stations is of the very greatest value, and is contributing most materially to the development of agricultural industry. To take only one illustration, whereas, in 1884, the amount of sugar made from sugar beet was only about 300 tons, the beet crop of the past year is estimated to yield 400,000 tons; the amount of sugar made in the United States from the sugar cane being only about 300,000 tons. This extraordinary increase, I believe, is due practically entirely to the influence exercised from Washington. A map showing the regions in which the temperature conditions were favourable to the growth of the sugar beet was first prepared by Dr. Wiley, the head of the Bureau of Chemistry. Seed was then issued to farmers in various districts together with directions how it was to be dealt with, and the produce was subsequently examined for sugar; in this way it was determined where the beet could be grown successfully. The advantages to be derived from the cultivation of the crop were also made clear to the farmers. An industry of great importance has in this way been gradually brought into existence; at the same time, farming practice has been vastly improved and land has increased considerably in value owing to its having received proper treatment.

The Department is undoubtedly exercising an extraordinary influence on the education of farmers by distributing literature among them and by encouraging and helping them in every possible way; indeed, it is certain that, by one means or another, the American farmer is gradually being led to see that science is indispensable to agriculture.

The work that is being carried on in New York State under the direction of Professor Bailey, the director of the College of Agriculture at Cornell University, Ithaca, may be referred to in further illustration, as this is now a head centre of the Nature-Study movement. The character of one branch of the work may be best made clear by the reproduction of the following circular letter relating to a reading-course for farmers:—

To the Editor,

Will you not help us to reach the farming community by inserting the following note? The reading-course described below is provided for the farmer by State appropriation. We want him to receive the fullest possible benefit. Kindly send us a marked copy of the issues containing this notice.—Very truly yours,

S. W. FLETCHER,

Supervisor of Farmers' Reading Course.

WINTER EVENINGS ON THE FARM.

The wide-awake farmer is now wondering what he can do in the long winter evenings to aid him in the work of next season. He would like to know more about the things with which he has to do; how he can feed his crops better; how he can make a piece of "worn out" land fertile once more; how he can get the greatest feeding value from the stock of hay and grain in his barn. Many of these practical questions are in his mind at this time.

We would suggest that one of the best ways of answering them is through the "Farmers' Reading Course," conducted by the College of Agriculture of Cornell University. Once each month, from November to March, a short lesson on some practical farm topic is sent to each member. These lessons are written in a plain way, so that any farmer can readily understand. The only expense to the reader is an occasional stamp in reply. Many thousand New York farmers are now enrolled in this reading course. All that is necessary to become a member is to send your name on a postal card to Farmers' Reading Course, Ithaca, N.Y. The State pays for this work, and every one in the State interested in farming has a right to its benefits.

For many years Professor Bailey has been studying the improvement of the grounds of rural schools. Recognising that the school playgrounds are, as a rule, "bare, harsh, cheerless, immodest!" he has sought to interest those connected with the schools in making them attractive and has put forward hints for the proper laying out of the grounds. The literature on this subject issued from Cornell is of a most valuable character.

But perhaps the most interesting of the movements going on under Professor Bailey's influence is the formal organisation of junior naturalist clubs in schools all over the State. This is under the direction of Mr. John W. Spencer, known as Uncle John, whom I had the privilege and pleasure of meeting. The object of such clubs "is the study of nature to the end that every member thereof shall love the country better and be content to live therein. Each member is expected to tell Uncle John at least once a month by letter or by drawings what he or she has seen or thought on some topic in nature-study suggested by the teacher or by the Bureau of Nature-Study." These letters are duly registered and read. On the receipt of the fourth, a badge-pin is sent to be worn as a testimony that the owner is entitled to all the honours due to a young naturalist. At intervals, Uncle John writes a letter to his young friends. These letters are full of charm.

Teachers' leaflets and a "Nature-Study Monthly" are issued in connection with the enterprise. The number of children enrolled is over 35,000. There can be no doubt that a pioneer work of great importance is being done, on which it will be possible to build in the future. It is not possible now to discuss in any proper way the method of teaching adopted. I desire to say everything in its favour, feeling as I do that the object in view is all important; but I am satisfied that the work lacks depth and that those engaged in it are not yet aware of the extent to which it is possible to introduce exact method into such studies; they need to be more fully acquainted with the practice of scientific method and with the art of discovery. It would be more nearly correct to speak of the movement as one for the promotion of Nature-love rather than as Nature-Study. At present it involves far too little real study and concentration of purpose; which is unfortunate, as rural children particularly need training in exactness.

One branch of work initiated in the Office of Experiment Stations at Washington of extreme importance, to which reference should also be made, is that relating to the nutrition of man, which has been carried out in various parts of the States under the supervision of my friend Professor Atwater—a fellow student with me in Germany in years gone by—who initiated the inquiry in 1877. The scope and results of the investigation are described in the report of the Director of Experiment Stations for the year ending June, 1901. Undoubtedly the most important and valuable part of this work has been that done during recent years at the Wesleyan University, Middletown, Conn., where a large respiration chamber has been erected and brought to a remarkable state of perfection by Professors Atwater and Benedict. The installation is a very costly one. It is possible for a man to live within this chamber for days or even weeks and for account to be kept during the whole time, not only of the products of respiration but also of the amount of heat given out and the oxygen consumed, with a degree of accuracy equal to that with which ordinary analyses are carried out in a laboratory.

No better illustration can be given of the amount of thought and care which is now being devoted to investigations of practical importance in the United States. I went specially to Middletown to examine the apparatus and was gratified beyond measure; to see it alone was worth a pilgrimage to America. The investigations which can be carried out with such a chamber are of far-reaching importance and touch very closely on the domain of household economics. It is much to be desired that we, on this side, should be able to do similar work.

The Geological Survey is also a well-organised department in Washington. The wealth of material at the disposal of American geologists is extraordinary. If opportunity beget supply, we may look to America as the breeding ground of geologists in the future. Besides field work and the attendant office work, the department now carries on scientific research work on geological problems. It has a well-equipped Chemical Department, at the head of which is Professor Clarke, who a few months ago delivered in Manchester the lecture commemorative of the centenary of Dalton's atomic theory. Much valuable work has been done in this department, which is now quite the seat of authority in mineral analysis, Dr. Hillebrand, the senior member of Professor Clarke's staff, being probably the most accomplished and experienced analyst of the day.

Lastly, it may be mentioned that a bureau of standards has recently been established at Washington to do work on the lines of that done by our Standards Department, the Board of Trade and the National Physical Laboratory, but with a wider outlook than any of these and well provided with funds.

When we consider how unco-ordinated our efforts are, how little public appreciation exists of the value of science to the community, it is impossible not to feel envious of what is going on in Washington. It would well repay us to inquire very fully into the causes which have operated to produce a willingness in America to listen to counsel which here passes altogether unheeded. Something must be done to create a public belief in the value of knowledge, which will lead us to co-ordinate our scattered efforts. So long as our outlook is merely insular the future may appear to afford little promise; but if we consider the possibilities the Empire affords, there is no reason why our outlook should not be as hopeful as that of the United States. The resources at our disposal, the agricultural possibilities within the Empire, may well be regarded as boundless; but we need to make ourselves acquainted with them and to take concerted measures to exploit them. To this end, it is all-important to constitute effective central organisations in this country similar to those which exist in the United States.

One other illustration may be given. In New York, on the occasion of our visit to the Museum of Natural History, Prof. Bickmore, to whom this magnificent museum owes its origin, favoured us with an account of the manner in which material was provided for illustrated free popular lectures delivered at the museum, for the purpose of making the people acquainted with their country and its resources; and he delivered a charming lecture to us in illustration of the work. The lantern slides prepared in the museum are placed on sale, so that they can be used for educational purposes all over the country. The lecture we heard was of a very popular character; it was quite clear, however, that pioneer work of a most

useful character was being done. It was impossible not to feel that if the resources of the British Museum were made known by sound popular lectures and handbooks; if the Museum, the Ordnance and the Geological Survey Departments, and the Colonial Office were to co-operate with the Education Department in making known the conditions which prevail throughout our Empire, it would at once be possible to put the teaching of history and geography on a basis of fact and make these subjects eminently attractive. The Geological Survey exists as a branch of the Education Department but its reports are of technical rather than of educational value; they might well, in part, be so written as to be delightful essays on physical geography suitable for school use, if only a little thought were given to them from this point of view.

It is quite clear that the right spirit is at work in the United States; but the lack of the critical faculty and of depth of purpose, combined with an excessive development of the utilitarian spirit, are serious drawbacks at present and militate against progress in education. Until higher ideals prevail and sober calculation takes the place of a somewhat emotional and superficial consideration of its problems, it will be difficult to introduce reforms. Here our difficulty is to break through academic, conservative traditions and to arouse an interest in education: that in reality it is the most important of all subjects to be seriously considered has never yet been made clear to us either by preacher or by politician—the message awaits delivery and we need more than anything else the man to make it heard.

HENRY E. ARMSTRONG.

Mosely Educational Commission.

Report of PROFESSOR W. E. AYRTON, F.R.S.

THE EDUCATION OF THE AMERICAN ELECTRICAL ENGINEER.

Although I take a keen interest in primary and secondary education, as well as in business and technical education, and although, therefore, I visited various American elementary schools, trade schools, schools of commerce, and technical schools, in addition to universities, technical colleges, and factories, the shortness of the time during which I could stay last autumn in the United States induced me to devote myself almost entirely to the study of one branch of education, viz., that of the young electrical engineer. And the information I gained during the three weeks, combined with what I have learned during former visits, enables me to state conclusively that, as far as the training of the young electrical engineer is concerned, the United States are, on the whole, distinctly ahead of Great Britain.

It was not because I found some of the electro-technical laboratories in the States larger and better equipped than in my own country, nor because some of them contained full sized machinery, instead of mere models, nor because I saw large numbers of students working in them, that this opinion of the superiority of the teaching of the young electrical engineer was forced on me. Indeed, in New York, for example, I found no electro-technical laboratory comparable in equipment with what may be seen in more than one teaching institution in London. But it was because in this city, as in all other places that I visited in the United States, I saw that there actually existed that close bond of union between the industry and the teaching which only the more sanguine of us have hoped they might, perhaps, live to see introduced into our own country.

I talked with manufacturers and managers of works, with engineers having a large consulting practice, with engineers having a small one, with municipal engineers, with presidents of engineering societies, with presidents of universities, with professors of engineering, with the staffs in laboratories, with students in colleges, and with the editors of technical papers regarding the relation between a college and a factory. I took down exactly what they said, so that it should be their views, and not the opinions that I have for years been urging in my own country, that should form the basis of this short report.

All the people of the classes enumerated above whom I met were unanimous on two points—there was not one dissentient voice. Everywhere I was told: *An engineering apprentice in a factory should be a college trained man; an engineering professor in a college should be actively engaged in the practice of his profession.*

At the Westinghouse Electric and Manufacturing Works at Pittsburg, where some 10,000 men are usually employed, where, in addition to manufacturing all kinds of electrical apparatus and machinery, they turn out in each month about sufficient street

railway electro-motors to fit up all the electric tramcars now running in Great Britain, Mr. Downton, the foreman of apprentices, said: "The engineering apprentices, of whom we have about 150, must be first-class graduates of leading technical schools. We start them on trial at 8d. (he said, of course, 16 cents) an hour, and if really bright they may be earning £30 a month with us at the end of eight months. We are always on the look-out for bright men, we co-operate with the professors of colleges to get them. Why, the bosses here are mostly college graduates themselves. There's Mr. Taylor, second vice-president, graduate of Harvard; there's Mr. Osborne, fourth vice-president, graduate of Cornell; there's Mr. McFarlane, acting vice-president, he was educated at Annapolis before he taught at Cornell himself; there's Mr. Scott, chief electrician, graduate of Ohio State University; there's Mr. Lamme, chief engineer, graduate of the same university," and so he went on giving me a long list of the staff and the colleges from which they came. "Now," he continued, "although we pay our technical apprentices from the first day they join, we are prepared to regard them as learners, not as producers, so that we move them from department to department about every three months."

The following extract from the printed regulations will show how the old apprenticeship system has been brought up to date in America and applied to the technical education of young electrical engineers. As in so many cases, England originated the system, America then adopted and developed it, and it now only remains for Great Britain to re-import it, modernised to suit present developments:—

"WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY.

"COURSE FOR ENGINEERING APPRENTICES.

"This course has been arranged for graduates of universities and technical schools.

"The company desires to train a skilled force of engineers upon whom it can draw for assistance in the various branches of its industry.

"Approved applicants will be given the opportunity of entering the works of the Westinghouse Electric and Manufacturing Company in order that they may become familiar with the various manufacturing operations and the general construction and working of the apparatus produced. The engineering apprentices will be afforded, in the various departments of the works, actual shop and engineering experience, both mechanical and electrical, and the work of the technical schools will be supplemented by the practical training thus afforded.

"COMPENSATION.

"The engineering apprentice will be paid 16 cents per hour during the first 2,808 hours, and 18 cents per hour for the second 2,808 hours. Where called upon to work overtime or holidays, due credit will be given therefor, and the rate will be one and one-half time for such overtime work.

"APPLICATION.

"Application for admittance as engineering apprentice must be made by letter in the handwriting of the applicant, stating:—

"Date of birth.

"School education and where received.

"Name of University.

"Course pursued.

"Degrees received.

"Reference to Professors or others.

"Statement of any practical experience which applicant may have had."

The Westinghouse Company also takes some 80 non-technical apprentices to be trained as machinists, who correspond more with what the English apprentice has become. These start with 5 cents (2½d.) an hour, on trial for 685 hours. If worth keeping, their wage

progressively rises to 8, 10, 12, and lastly to 15 cents ($7\frac{1}{2}$ d.) an hour during the fourth year, at the end of which they receive a bonus of £20 and a diploma. If they show particular aptitude during their apprenticeship they are given special work, and in some cases they become electrical engineers.

Two of the chiefs of the staff visit all the principal universities, colleges, and technical schools throughout the United States every year for the purpose of seeing the students, and choosing those who are most suitable to work with the Westinghouse Company. "The Westinghouse Works are the product of the colleges of this country," said the chief electrician; "we have come to rely on college men, we are now practically all college-bred men ourselves. And yet, when I came to Pittsburg and knocked at the side door of a factory, the fact that I was a college-man counted against me in the mind of the superintendent. Now the same firm sends, each year, to the technical schools asking for their best men, and sometimes, during one yearly visit we take the whole class from a college." This statement was confirmed by what was told me in New York about Professor Hutton receiving letters before Graduation Day engaging 70 of the engineering students at Columbia University.

"Talk to some of our employes yourself," said Mr. Scott, and I did. One was a young Englishman, who, after taking his degree at the Victoria University, became a premium pupil at £150 a year with one of the prominent English electrical companies. But he learnt so little that, at the end of the first year, his father determined the contract, and the lad then came to Pittsburg. He gave me a long and detailed description of the work that he had done there, and ended with: "The apprenticeship system of the Westinghouse Works is simply splendid."

Another man, an American, now holding a good position in the Westinghouse Company, and as enthusiastic about their methods as the first, gave me a most pathetic account of how, when a lad on the farm, he had been inspired by the country schoolmaster; how, to support himself and help his family, he had got up morning after morning at 2 a.m. to milk some 30 cows; how he got pay in a machine shop right there in the rocky part of Oregon, then went to the Ohio State University, still getting paid work, cooking and cleaning. And I felt that anyone talking to this man and hearing him explain how "the strenuous work on the farms produces the stock from which springs the American engineer," how "seven out of his eight brothers were now employed in Westinghouse interests," would have realised, if he had not done so before, why the Americans were so successful in their commercial invasion of Europe.

A third man was a former professor of applied mechanics, who described how he had come to the Westinghouse Company's works at Pittsburg, and was engaged there on a "fascinating problem in mechanics connected with the theoretical and practical determination of the economic electric driving of large machine tools," and so on. Example after example I saw of the college and factory going hand in hand.

At the General Electric Company's huge works at Schenectady, hundreds of miles away from Pittsburg, which usually employs some 9,000 to 10,000 men, and is on the same vast scale as the Westinghouse Works at Pittsburg, I found the same scheme carried out. The electrical superintendent, Mr. Steinmetz, and the general

manager, Mr. Raymond, both spoke of their feeling "the need of technically educated men in all departments"—how they only take for their "365 test students graduates of colleges of high standing"—how "they together visit each year all important colleges as far west as Illinois and Ohio to see the professors, to see the men who contemplate going into practice" so that they may choose some 150 bright college youths every year, how they had met on these annual visits representatives of other large electric works on the same quest, how they all aimed at fostering "a mutual alliance between the factory and the college," how that because a student happened to be good at drawing they did not keep him in their "draughting rooms, but let all students go through department after department so as to learn."

Mr. Raymond told me about his company "paying a good smart fellow \$18 to \$20 (*i.e.*, £3 12s. to £4) a week inside his student's course of two years"—one of the half-dozen of my recent students, an Italian, whom I met in the works, mentioned that he sometimes made £9 a week with overtime—and how occasionally "they provided a student with a position at \$1,500 (*i.e.*, £300) a year after being four months with them"; and lastly, how on leaving the works, at the end of the two years' studentship, they got outside positions at from £240 to £700 a year.

At Schenectady there is a college of long standing called Union College, at which lectures are given alternately by a member of the Faculty and by a member of the General Electric Company's staff. These lectures are open to all whom the Faculty considers suitable, but they are attended mainly by the students and draughtsmen of the General Electric Company. I went to one which happened to be given by Mr. Steinmetz himself—it resembled a Royal Society paper, full of original matter, but enthusiastically delivered. "Yes," said the lecturer, when I spoke to him, "we manufacturers here appreciate that theoretical knowledge is of enormous value to the engineer."

The Union College students have the free run of the General Electric Company's factory. Indeed, I was taken over its many large buildings by Mr. Williams, a teacher at the college. He requires no pass to enter the works, he brings his students for a forenoon or for a whole day to the factory—that is, he uses the factory with its 10,000 workmen, with the 6,600 horse-power combined steam turbines and dynamos in construction, etc., etc., as his lecture apparatus.

During the college vacations *any* engineering student, Mr. Steinmetz assured me, "could come into the factory and get a moderate salary in the testing room, armature winding shop, etc." And to think how my students, failing to induce English firms to let them give their services, their knowledge, and their time *gratuitously* during the vacations, come to me year after year to help them to obtain permission to work for nothing at these times!

"It is universal to loan *modern* apparatus to universities free of charge, or even give it—it is to our mutual advantage—it helps to make a close connection between universities and factories," added he. And my inquiries at colleges regarding the modern apparatus that had been given them by private firms fully confirmed Mr. Steinmetz' statement, and, indeed, they made my mouth water. I saw £600 worth of electric meters that had been presented to one college by one firm; some thousands of pounds worth of engineering apparatus given by various firms to one university, etc.

"Thirty per cent. of the students of the General Electric Company are British, and within five months the English students drop into step and hustle." I discussed with a group of former City and Guilds Central Technical College men now at Schenectady how the students at their old college could be made to acquire that alertness and go-aheadness that we saw all around us there, and they advised, "Send as many of them as you can to America."

A good example of the advantage gained by college-bred men in the States is seen in the following analysis of the engineering staff engaged in the construction of the "Rapid Transit Railroad"—the new Underground Electric Railway of New York, costing between £5,000,000 and £6,000,000. The men are chosen by examination, and the selected ones get a salary of £20 a month at the start.

I suggested to Mr. Barclay Parsons, the chief engineer, that perhaps the reason why so large a percentage of college-bred men were chosen was because the examination questions were such as a college-trained man could better answer than one who had entered on practical life when quite young. But he showed me copies of the questions, and convinced me that they were such as an applicant for an assistant engineership ought to be able to answer whatever had been his previous training.

Now one of the reasons why, in spite of the many places at which electrical engineering is taught in America, the demand for college graduates is still greater than the supply, is because the education which they have received is exactly what the manufacturers desire. It is not given by teachers, the terms of whose appointment divorce them from industry, by men who perhaps even learn to look down upon the manufacturer, the engineer, the manager, and the salesman, although these people are actually occupied in practising that very application of science to industry which the teacher preaches. No, engineering education in America is directed by those who are doing the engineering work of their country.

There is no question about an engineering professor in America being *occasionally permitted* to do a small amount of outside work, he is practically *required* by the college authorities to be so actively engaged in practice that he becomes recognised in the world of affairs as the working authority on his subject. "Don't know a successful engineering professor who is *not* engaged in outside work, who, in fact, is *not* successful in outside work," was the opinion round the lunch table of those in authority at the Library of Congress, Washington. "The head of every department in a technical college is a consulting engineer in practice," said another. Mr. Barclay Parsons, who spoke not merely as a large employer of labour but as a trustee (a member of the governing body) of Columbia University, told us, "We not only permit outside work, we encourage it in our staff. When Professor Burr (of 'Civil Engineering') was appointed a member of the Isthmian Canal Commission we gave him long leave to go to Porto Rico." And when I asked, with reference to this and other examples which he gave, "But do the students like such long absences of their professors?" he replied, "Yes, they lose him for days or months, but they gain, for he brings back accounts of the new work he has done."

I had a long talk with President Schurman, of Cornell University, where there are some 1,200 students of engineering alone. He considered that there was no question about the importance of the engineering professors engaging in practice, but that when a professor

ENGINEERING STAFF. EDUCATIONAL STATISTICS.

	Number.	Columbia.	Harvard.	Cornell.	Cooper Institute.	Rensselaer Polytechnic.	Massachusetts Inst. Technology.	Union.	Lehigh University.	Yale.	New York University.	Lafayette College.	Washington and Lee University.	University of Vermont.	U. S. Naval Academy.	Brooklyn Polytechnic.	Manhattan.	Stevens Institute.	Princeton.	Boston Institute.	Dartmouth College.	University of Maine.	McGill University, Montreal.	College University, D. C.	N. W. University of Ontario.	Ohio State University.	Michigan University.	University of Virginia.	Virginia Military Institute.	Rutgers.	Bucknell University.	Munich.	Pratt's Institute.	Worcester.	Toronto.	Total College.	Non College.	Per Cent. College.	
EXECUTIVE STAFF.																																							
Chief Engineer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
Deputy-Chief Engineer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
Division Engineers	7	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	71.4
FIELD.																																							
Assistant Engineers	109	24	9	9	5	4	4	4	4	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	85.3
Total Engineers	118	27	10	9	5	5	4	4	4	3	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	84.7

was away from the university for six months doing private outside work, he had been led to ask the Dean of the Science Faculty, "Are we losing this man's time?" The reply, however, had always been: "The university gains." So he had been led to conclude that even to the extent to which it (*i.e.*, outside work) was done it undoubtedly led to the welfare of the university. "In fact," said President Schurman, "I recently received a letter from Mr. Walter C. Kerr, president of Messrs. Westinghouse, Church, Kerr and Company, which proposes our giving our engineering professors even still more opportunity to take part in outside work than at present. Mr. Kerr is a trustee of our university, and was formerly an assistant professor in it, so that he is quite familiar with our organisation." The following is an extract from this letter, which is dated June 23, 1903:—

"I have given some thought to a feature in technical education, at least certain portions of engineering education, which might be improved.

"Without undertaking to rehearse all of the facts surrounding the conditions under which this education is given, I think it is true that college professors after ten or twenty years of work grow out of touch with the arts they are teaching, and become what is generally called 'too academic.'

"This is not true of all, nor does it apply equally to all of the different departments of engineering, but more particularly those in which close touch with the art is particularly necessary to competent instruction.

"I have, therefore, thought that certain chairs—perhaps a half-dozen or more—in the department of technical engineering, and perhaps some in the other engineering schools, might be filled by two men instead of one—these men serving alternate terms of two, three, or four years each in the university and out in practice. I am aware that there are limitations and difficulties to this method, but I doubt whether they are as great as those existing under the present plan.

"I am reminded of the practicability of this through the fact that Professor A. W. Smith, Dean of the Department of Engineering in the Leland Stanford University, has worked for us for two years most acceptably, and, after opportunity to stay with us in high position and at better salary than a university can pay, he chose last fall to go back to his university position. Again this summer he is with us, and in the fall will be back at Leland Stanford. There are doubtless others whose temperaments would adapt themselves to such dual relationships, and I believe this beneficial effect upon temperament would be quite equal to the material benefit otherwise gained.

"I think it would not be difficult to find a half-dozen or more concerns in the country who would be willing to agree to thus employing such men alternately with the university, and it would not be necessary that they should go to the same place every time."

"The professors who turn out the best students are the very men who are running around about outside work," said the chief electrician of the Westinghouse Company, and he gave me an example of a professor who spent so little time at his college, and apparently gave the students so little attention, that he ran the risk at first of being thought to neglect them. "But he was found to show such real strength as a manager and director, to come back with such modern ideas about engineering needs and necessities, etc., that he was actually requested to take a post at a larger college at a higher salary."

Some of the professors at Cornell earn two or three times as much as their university salary, "which is not, therefore, made less than that of a brother professor, who may give his whole time to the college, because an hour of the former man is considered as being worth many times that of the latter." Such teaching is too valuable to require any compulsory attendance being imposed on the students. They come at 8 a.m., some much earlier; "the attendance is quite voluntary," as far as the university is concerned, but "if a man came

habitually late, the freshmen and sophomore boys would guy that fellow and make life miserable for him," said one of the engineering professors.

"A college gets a better reputation if it is known that their professors get large fees outside, because they are then better able to instruct," said another.

Dr. Humphreys, the president of the Stevens Institute of Technology, New Jersey, a college for the training of mechanical engineers only, but numbering amongst its staff a professor of English, an instructor in modern languages, a professor and an assistant professor of electrical engineering, etc., told us that he was a partner in Messrs. Humphreys and Glasgow, of New York, of the same firm in Victoria Street, London, the president of the Buffalo Gas Company, etc., but the trustees thought that in spite of his many business occupations, or rather because he was so occupied commercially, he was the person to appoint as Professor of Business Engineering, President of the Institute, and one of the trustees. "I consider distinctly," said he, "that an engineering professor should be interested in business. If a man is not capable of doing outside work, he is not capable of teaching. The staff does not consult me to get permission about outside work. The Stevens Institute Department of Tests may carry on any outside work in the institute's laboratories, and may retain all but 10 per cent. of the fees they receive.* This large proportion of fees that the staff is allowed to retain is not for the object of curtailing the income they receive from the institute."

This extra remuneration has, however, the important result of materially increasing the income of the staff. For my inquiries showed that the fixed salaries paid by colleges to assistants were often—allowing for the different value of money—not higher in America than in Great Britain. This was attributed, for example by Mr. Steinmetz, to the "survival of European practice." He looked forward, however, to an improvement in this, since "the main object, the main desire of educational authorities was to get the men who were most up to time in methods."

On each of the many occasions that the importance of outside work was urged on me, I pointed out the possible risk of a man becoming so immersed in professional work, and deriving so large an income from his practice that he might come to disregard the salary derived from the university, and neglect his students. Although I remembered that even in Great Britain the teaching of a surgeon was not considered the less valuable because he performed many successful operations, and that a musician was not regarded as necessarily neglecting his pupils because he was paid large fees to appear on the concert platform, still—even at the risk of appearing dense—I made a point of raising the preceding objection because I knew that it would be the English point of attack. But I was always answered that the risk I referred to was far less serious than the risk of the professor's teaching deteriorating from his losing active touch with the industry. "The man who spends all his time at the college slips behind. If a man is good enough to be a professor he can be trusted to be fair; if he is going to rob us, he is not good enough to be at the college at all."

* Principal Humphreys considered 10 per cent. of the fees paid for private outside work, carried out in the College Laboratories, too small a proportion to re-imburse the Institute for cost of material, wear and tear of apparatus, etc., but that was the existing rule.

A professor in one of the large cities, whose college salary is 6,000dols., receives also 4,000dols. a year as the secretary of an engineering society. Whenever the society meets away from that city leave of absence is given him by the university. "He divides his time at his discretion. The university is proud of his having been chosen as the secretary, the society is proud to have so distinguished a professor."

One of the staff in one of the large laboratories in Columbia University gave me a list of the regular fees charged for the commercial tests carried on at the laboratories. "We are encouraged by the university to do outside work; the assistants are more or less free the half of each day." "But suppose you were asked to carry out during term time a *prolonged* test at a distance from New York how would you arrange?" I asked. "Engage a staff of suitable outside men to carry on the work under me, and bring them for a day or two into these laboratories if special training was necessary?" "No! The university would not charge these men a fee for working a day or two in the laboratory for this purpose."

And what applies to the staff applies to the students. At the Cornell University "the fourth year electrical engineering students, with some of the third year men as assistants, may go out for some days a week, or for some weeks, with a thousand dollars or more worth of apparatus, lent them by the university to carry out commercial tests hundreds of miles away under the professor."

Reality is the watchword of engineering education in America, for not merely are the professors on the Faculty of an American college engaged in real outside work, but several lectures are given yearly by engineers who are otherwise wholly engaged in practical work, and not connected with the college. For example, in the last catalogue of the Massachusetts Institute of Technology it is stated: "During the past year the following gentlemen have given instructions of this nature:—

"Mr. George W. Blodgett, formerly electrician of the Boston and Albany Railroad, on the Application of Electricity to Railway Signalling; Mr. Hammond V. Hayes, electrical engineer of the American Bell Telephone Company, on Telephone Engineering; Professor Elihu Thomson, on Recent Developments in Electrical Engineering; Mr. C. J. W. Woodbury, of the American Bell Telephone Company, on Electricity in its Relation to Fire Risks; Dr. Louis Bell, on the Electrical Transmission of Power and the Application of Electricity to Railway Transportation; Mr. S. Everett Doane, of the Marlboro' Electric Company, on the Manufacture of Incandescent Lamps; and Mr. Odin B. Roberts on the Nature and Function of Patents for Invention."

"I daresay you think this subversive of all discipline," suggested my host, as we walked through the empty engineering laboratories at Ithaca, the engineering students having decided, without reference to the university, to abstain from college work for two days out of respect for their Dean who had suddenly died, "but our aim is to encourage a division of responsibility, so that the man who is nearest the thing to be done acts for himself, without waiting for instructions; we hold our students responsible only for the results attained. It is a great advantage for young men in America to get out of the beaten track." Here was one of the causes for the American spirit of initiative, alertness, and enterprise put in a nutshell.

In America much less importance is attached to examinations than in Great Britain. Whether a student is worthy of a degree is left to the decision of his professors, without the intervention of outside examiners. They are greatly influenced, they told me, by their estimation of the value that the student would be to the world. On the other hand, America's judgment of a professor is based on his power of attracting students, on the demand shown by the industry for the men he turns out, and generally on the name he makes for his college. And so far from *valuing* an engineering professor for daily attendance at college from some early hour in the morning to some late hour in the afternoon, the authorities would, as a rule, deem such constant attendance a neglect of duty, because such a professor was not seeking outside for practical knowledge and experience to impart to those he had to teach.

America being a go-ahead country, and the land of youth, one is somewhat astonished at being told by various thoughtful people—from the President of the United States downwards—that there is a growing impression that a student should not leave the professional school until he is 24 or 25 years old. For they urge that, after leaving the high school at 17 or 18, he ought, before proceeding to the professional school, to go to college to learn "classics and culture," since an engineering student should receive considerable literary training to fit him to become the all-round man who can command commercial success. For example, at the Stevens Institute all the engineering theses written by the students "must satisfy the Department of English." Some American engineers, however, think that 24 or 25 is too late for a student to enter the factory, and so they suggest, as an ideal course for an electrical engineer, something like the following:—

At the Public Elementary School	6 to 14 years old	
" " High School	14 to 17	"
" University	17 to 20	"
" Technical College	20 to 23	"

In England even 23 would usually be thought too late to enter works, because it would be feared that the man might not so readily take off his coat and buckle to as at an earlier age. But it must be remembered that the American students while at the technical college are taking part in outside work under the practical engineers who are their college teachers. Hence one can understand the statement that was made to me: "The men whom you are surprised to find holding such important positions in factories, although not much over 30, are the very men who did not leave the technical college until they were 23 or 24." "The graduate may have been 25 before he donned a jumper, but in five years he learned more with the college training he had as a foundation than the regular journeyman in 15 years of actual work in the shop."

Education is immensely valued in America, and the people are willing to contribute large sums for its support. The money is not voted grudgingly, but in the belief that a splendid investment is being made. This widespread enthusiasm for education and the realisation that to keep engineering teaching abreast of engineering progress, the professor must lecture on what he is doing and not on what other people have done, probably accounts for the absence of any jealousy being shown by the practical man towards the professors who combine a remunerative private practice with teaching.

Organisation is a marked feature in American undertakings. At any important university, for example, the engineering teaching is sub-divided between several professors, each giving instruction in his own particular branch, or sub-branch, each, therefore, being able to keep his thoughts on one line of development, each having the time and the available energy to materially aid in that development. In England, on the other hand—even in its capital—over 150 students may be found in the electrical engineering department of a college, men carefully selected by entrance examination, men giving their whole time all day, every day, to the study of their profession, and yet one single professor of electrical engineering, with a staff of poorly-paid assistants, is considered sufficient. Yearly some of the students may go out into dynamo manufacture, some into electro-chemistry, some into electric traction, some into manufacture of sub-marine cables, some into electric power transmission, some into wireless telegraphy, and so on, yet that professor, while staying the greater part of his time inside the college walls, is expected, in some miraculous fashion, to keep himself in such practical touch with all these branches that, no matter what may be the one a student may select, that student shall be equally well prepared to enter on his profession.

Since want of funds will probably render it impossible for even the most important colleges in London to have a separate professor for each branch of electrical engineering, it is extremely important that all the chief London professors of that subject should be gathered together in one spot, and provided with an adequate staff and equipment, so that each may devote himself to the efficient teaching and development of a definite branch of the subject.

Educational authorities in America agree with our own in deprecating the idea of one building, or set of buildings, being used for students up to graduation, and another building, or set of buildings, for post graduate students. They consider that one professor, with his staff, should give all the teaching—ante and post graduate—in one branch, say, electric traction on roads, railways and canals; another, with his staff, all the teaching in another branch, say, land and submarine telegraphy and telephony, while a third professor, with his staff, would deal with, say, the design, manufacture and testing of heavy electric machinery, etc. Ante-graduate students should not feel that they have merely to acquire knowledge and that its advancement should be left solely to the post graduate one—all students, junior or senior, all teachers, young or old, should learn to inquire, and in order to do so, they should have the chance of seeing one another at work.

In fact, if the best teaching and the greatest development in each branch is to be secured the Americans think that the division lines should be drawn vertically between branches of the subject and not horizontally between students of different ages.

As in the American College so in the factory, the effects of organisation are very noticeable. At a large electrical works one man is expected to be the authority on direct current machinery only, another on single phase alternating current machinery only, another on polyphase alternating current machinery only, etc.; hence each line receives constant development. In the great workshop of the Westinghouse Electric Works at Pittsburg there is a portion devoted to *experiments* on tools for use in that

workshop; among the many large buildings of the General Electric Company at Schenectady there is one mainly devoted to *research* with a complete staff of its own. In a factory in America the instruction "Originate, don't copy" can be, and is, literally carried out—no wonder then that each time one goes to that country one finds oneself in a new electro-technical world.

A comparison between students in the two countries shows that the American student is usually not as scholarly, nor as well read, as the English student of the same age; but "he has his knowledge in a better form to apply." The British system turns out a man full of knowledge and principles, while the American product is a business man with a scientific training. The characteristics of each nation have their advantages. To America we look for that rapid, bold, and successful application of science to industry which has brought about the commercial invasion of the world, while to Europe we look for those scientific imaginings and creations which are apparently so unimportant to-day, but which to-morrow revolutionise old industries and give birth to new ones.

My grateful thanks are due to all my American friends for the great help and the many kindnesses which they have always showered on me. And even during this last visit when, in order to obtain information, I was compelled to give them much trouble, and when, to avoid deriving an exaggerated impression of the superiority of the young American electrical engineer, I was forced to display a doubtful and critical spirit, they invariably showed that sweet and lovable courtesy which I have always found so characteristic of their nation.

W. E. AYRTON.

Mosely Educational Commission.

Report of Mr. A. W. BLACK.

The great facts remaining with me as the result of my educational investigations in America are :—

(1) That public opinion is much more strongly in favour of education than in this country ;

(2) That the scholars in America take a keener interest in their studies than is generally apparent here ; and

(3) That the teaching given in the elementary schools produces a mental alertness and readiness of mind to a greater extent than is secured in this country.

The people of America believe in education and they are willing to pay for it. They regard it as an investment of their money on which they get a good return. The people of England are only half-persuaded of the value of education, and there are still many who regard even the present expenditure on education as extravagant. This is particularly true in the agricultural districts of England, where the opinion is not uncommon that education spoils a lad for work on a farm.

The best teachers in America, in my opinion, are not better than the best teachers in England, but I am satisfied that the ability and qualifications of the average teacher are distinctly higher than in England. The simple explanation is that the average pay for teachers, taking into consideration the increased cost of living, is higher than with us. They pay more and get a better article. The great majority of the teachers in America are women, the proportion being about 13 to one. The chief reason for this great disparity is that women teachers cost less than men, and for the money paid they consider that they get better value from women on the ground that they get a first-rate woman for the price that would only command a third-rate man. I believe it is also generally conceded, both in England and America, that women make the best teachers for the lower grades ; they are more sympathetic, and understand better and enter more fully into the child mind.

There are no pupil teachers in America. Only trained teachers—graduates from the normal schools or teachers' training colleges, are permitted to teach and considerable care is taken in the selection of candidates ; not only are the academic qualifications considered, but character and personality are regarded as of prime importance. Too much stress cannot be laid upon the latter considerations. A teacher's business is not to teach so many rules of arithmetic, or so many facts of history, but to build character, to develop mental power, and to this end it is possible, while teaching less, to accomplish more.

It seemed to me that American teachers are more successful than our own in training intelligence, in teaching thinking, in bringing out self-expression, in encouraging inquiry. Their pupils are taught to give their views, to offer reasons, and I found that the teachers were willing to regard any suggestion, or reason, or statement from the scholars as worth consideration, however crude or

untenable it might be, and I never heard a pupil snubbed because he made a mistake or said something foolish. Again and again I found the teacher, with a freedom and familiarity which would seem strange in England, place himself, as it were, alongside his pupils and together they would work out the problem on which they were engaged.

In comparison with America, secondary education in England is woefully inadequate and incomplete. In New York and in other States it is possible for a child to go from the kindergarten to the elementary school, then to the high school and on to the University, and graduate there without having to pay a single penny for school fees, every book, pen, pencil, and school utensil used throughout the course being also provided free.

In England the great majority of the children leave school at the earliest possible moment; they go out to work to help to increase the family income. In America the children stay longer at school, and one of the leading educational experts in America said to me "We find that there is a direct ratio between the number of years spent in school and the productive capacity of the scholars in dollars and cents." This is no doubt true as regards the professions and for those who are designed for the higher positions in commercial life, but experience proves that it is also true that where a boy has to leave school early to go into business, if he has the determination to improve himself and takes advantage of the opportunities afforded by evening schools, he is not likely to suffer any handicap from competitors of his own age who come into the same business three or four years later direct from school. Unfortunately, however, such boys are all too few, and it is not too much to say that any boy in any business or profession who strives to excel and is energetic and persevering will almost invariably come to the top of the tree. This is, perhaps, only another way of saying that the clever enterprising boy can take care of himself. What we need to try to secure is that some of this spirit should be infused into more of the children. I believe that the great mass of the children who leave the English elementary schools, having been taught a smattering of many subjects, see no utility in what they have been taught, and have little or no desire to learn more. If this is true it is a serious thing, and requires looking into. Education cannot be regarded as successful unless it creates the appetite for knowledge, and if a child leaves school with the thirst for knowledge strong within him he carries with him not only the key to success in after-life, but the most priceless gift that a teacher can impart. If we are to secure this we must have intelligent teachers, teaching intelligently, interesting the children in what they teach; it may be that we should do better if we taught fewer subjects in the elementary schools and taught those few better. I believe also that we teach too much from books; everything in school tends to become too stereotyped. After all the most important lessons are not learned from books at all, but they may be learned from the character and personality of the teacher. Hence the importance of raising the standard of the teaching profession. We may have all that can be desired in the way of school buildings and equipment, our educational machinery may be perfect, but it is the man behind the machine that counts.

ARTHUR W. BLACK.

Mosely Educational Commission.

**Report of Mr. ROBERT BLAIR, M.A. (Edin.), B.Sc. (Lond.),
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TECHNICAL EDUCATION IN THE UNITED STATES.

I.

The term "technical education" has several connotations: sometimes the strictly mechanic arts point of view is adhered to; sometimes it is understood as that form of education which helps a man to earn a living. In the latter sense there is little that it cannot include: ancient and oriental languages for printers, Latin for solicitors, pharmaceutical chemists, and medical students; divinity, surgery, engineering, agriculture, hedge-cutting, hair-cutting, car driving, and chimney sweeping.

The second is the more popular view. "Technical education" has also been defined in Acts of Parliament, the main feature of the definition being the prohibition of the teaching of trades. The same Acts, however, allowed the inclusion of subjects other than those named in the definition, if approved and "minuted" by the central authority. The authorities, local and central, responsible for technical education being responsive to public opinion, subjects following the lines of the popular interpretation have from time to time been added, and highly ingenious arguments have been multiplied to show that trades were not being taught. The "last ditch" of the defence may be stated somewhat thus:—under industrial conditions the worker's operations are restricted in number and character in such a way that he must not only have the requisite skill to carry out the operation, but must repeat the operation so frequently that he tends to become a part of the machine—although a self-adjusting part, such as mechanical engineers have not yet been able to make out of wood or metal. Technical education, on the other hand, it is argued, promotes an opposite tendency in the individual; it affords opportunities for increasing the number of his operations, thus helping him to acquire manual skill of a more diversified character; and it also gives him the underlying theory of tools, materials, and processes. Such a view, added to the funds available for promoting it, has produced a British system of evening schools without parallel anywhere. I have seen the German evening school system and the American evening school system, and neither is comparable with ours in quantity or in quality. German and American educationists have a very high opinion of our British evening schools, but they look upon them as trades schools—institutions for the training of highly skilled operatives. Such is not a wholly incorrect view. Germans and Americans point with no unnatural pride to their Charlottenburgs and their institutes of technology, and not being able to see similar institutions with us they form a poor estimate of our system of technical education. They have "sized up" all our evening schools as mere trade schools. They do not see that most of our able and ambitious young men and young women are to be found in these

institutions adding a school evening to a workshop or counting-house day; they do not realise, and frequently we ourselves have failed to realise, that we are *in the main* trying to do in one institution—the evening school—what Germans and Americans are *in the main* endeavouring to do in two. In other words, they separate more clearly than we do the education of the “hands” and of the “heads.” The complaint as to want of preparation of our evening technical students is, to a considerable extent, evidence of this analytical defect in our educational authorities; not being clear in our aims we are confusing the issues and are endeavouring to do too much with all the raw material placed at our disposal; we are endeavouring to use the same process for the production of both “heads” and “hands,” and are too apt to apply the standard for “heads” to the recruits for “hands.” Britishers have held on somewhat tenaciously to the belief that leaders are “born, not made”; they have trusted to the native ability of the “lad o’ pairts”; and they expect him by sheer force of character to learn his trade, attend the technical school, and fight his way to the top of his business or profession.

It will be observed that in referring to the two processes, I have said “in the main” on both sides; for I am not overlooking our day technical institutions on the one hand, nor on the other that the American “lad o’ pairts” does “come through” by sheer force of character and ability, and with the aid only of evening technical schools, as ours do. I contend, however, that in the reservation “in the main” I have sufficiently allowed for the exceptions.

A few figures will corroborate my statements. In 1901 the total number of British day students of technology was 3,873. Of these 2,259 were engineering students. (See *Record of Technical and Secondary Education*, Vol. IX., No. 45, page 54.) In the nine German technical high schools (day institutions), there were 14,986 students in 1902 (see page 49 of Report by Dr. Rose); and in the scientific colleges and schools of technology (day institutions) of the United States in 1900 there were: students of agriculture, 2,852; of mechanical engineering, 4,459; of civil engineering, 3,140; of electrical engineering, 4,459; of mining engineering, 1,261; making a total of 14,267 students in addition to 10,925 students of general science courses (university and technological), including applied chemistry. (See page 1,875 *United States Commissioner’s Report*, 1901.) In Charlottenburg alone there were 3,428 day students in 1899 and 4,194 in 1902; in the Massachusetts Institute of Technology, Boston, 1,608 day students in 1902-3; and in the same year Sibley (scientific and engineering) College of Cornell University had 886 day students. The numbers become even more significant when it is realised that the British totals include all day technical students of *fifteen* years of age and upwards who were taking a complete day technological course of not less than 20 hours per week; and that the schools contributing to these numbers varied from those of university standard, requiring a good general education as a preliminary, to technical schools for which the only preliminary was an elementary school education. On the other hand, the German students are not admitted until they are 18 years old; and the statistics of the Massachusetts Institute of Technology, Boston, which in this respect may be regarded as fairly typical of the United States institutions, contrast favourably with ours. In 1902-3, 22·5 per cent. of the Boston students were between

16½ and 18 years of age; and 77·5 per cent. were over 18; none were below 16½ and almost 15 per cent. were over 20. The German and American students as a whole have had a much better preparation than ours; they show their high school (leaving) certificates as admission cards.

These figures fully support my view that German and American leaders on the one hand, and British on the other, are prepared in different ways—the American and the German mainly in day schools, the British mainly in evening schools. There are, of course, other factors; but I am dealing only with the educational.

II.

The institutions which I visited, and from which I formed my impressions of technical education in the States, were: The New York City Evening Schools, including the New York City Trade School; the Cooper Institute, New York; the Pratt Institute, Brooklyn; and the Springfield (Massachusetts) Trade School; the Drexel Institute, Philadelphia; the Lewis Institute, Chicago; the University of Pennsylvania, Philadelphia (Wharton School of Commerce); University of Illinois; Harvard University; Massachusetts Institute of Technology, Boston; and Cornell University.

Sibley College (Cornell) and "Boston Tec." are engaged in the preparation of the *leading officers* of the industrial world. These two institutions hold a deservedly high place in the public mind owing to their influence on education and on industries. They are the best of the many institutions one sees; but what is true of them is in varying, though less, degree true of the others.

The Pratt, Lewis, and Drexel are institutions of a secondary character. The standard required of entrants and the duration of the course differ considerably from that of Cornell University and "Boston Tec."; as a rule, they provide the *petty officers*, men to hold the intermediate positions, below the chief engineer and the general manager on the one hand, but above the skilled mechanic on the other.

The evening trade schools train the "*hands*."

The aims of these three sets of institutions are not so clearly defined as I have indicated, but I am confident that this classification does them no substantial injustice.

Trade Schools.—Let us take the last first. Some of the trade schools have no higher aim than conversion of unskilled labour into partly skilled labour. In one of the most important of these institutions the teaching was trade teaching of the clearest character with little thought of the "last ditch." Some of the instructors were Trade Unionists, and there appeared to be no active Trade Union opposition to the avowed objects of the school. In only one class (painters and decorators) was instruction restricted to students daily engaged in the trade. The other classes were made up of men who were not in the trade, but who, after a session's work, slipped away into the country and gradually worked their way back into the city as recognised tradesmen. Classes met three nights per week, two hours each night; six hours per week for six months. Attendance is very regular, and the students are very keen; they mean business. Some of the metal-industry trade schools aim as high as the making of the most skilled machinists and foremen—men who can take work at any hand or power machine, and who can read drawings. The work done in these schools is on a trade scale.

Secondary Technical Schools.—The schools (day and evening) of a secondary technical character may be said to stand in the same relationship to the front rank institutions such as "Boston Tec." and Cornell, as high schools do to colleges. They aim at taking students of 16 or 17 years of age whose general education is equivalent to that of the first two years of a high school, and who desire to specialise instead of proceeding with a further course of two years of general education.

The following extract from a paper on secondary technical education by Dr. Williston, Director of the Department of Science and Technology, Pratt Institute, is well worth serious consideration. The excerpt sets out clearly the ideas which govern the two years day engineering courses in the Pratt Institute :—

"Both in the draughting-room and shops of all our mechanical and electrical industries is this demand becoming more urgent for men who have had sufficient training in applied science to enable them to grasp and understand the plans of the engineer above them, and who have had sufficient knowledge of practical details to direct the carrying of them into execution. And this demand is all the more urgent, because for every engineer and master of construction a dozen men of this other type are needed to carry out his plans.

"Mathematics and physics are both fundamental to all mechanical problems and should therefore enter prominently. Design and construction should also be emphasised. Each day, therefore, there should be instruction in mathematics, physics, physical laboratory, shopwork, and mechanical drawing. If the day is divided into eight periods, this gives one period for each of the two recitations in mathematics and physics, and two periods each for laboratory, drawing and shopwork. Add to this two hours and a half for evening study, and you have a day under which any healthy boy will thrive. Such a large part of his time is taken up by work requiring physical activity, that he finds his task a wholesome one.

"The mathematics of the first year should include algebra, plane geometry, and elementary trigonometry—but not taught from the ordinary text-books. The mathematics will give the best mental training and the broadest, if it is closely allied to the other work, so that it may be more thoroughly understood in its meaning and its application. And as the young men are to enter the field of construction, all their school training will have the greatest educational value if it is closely allied in purpose and spirit to their life-work, so that the process of thought and education may continue without interruption after they leave school. Therefore, the mathematics should be made practical and constructive. The student should be made, not only in geometry but in all other branches, to construct his own proofs and to build up step by step, under close and continual guidance, his own methods of reasoning.

"The physics, too, should be taught with special reference to the work that is to follow. Mechanics and certain portions of heat and electricity should be dwelt on; the remainder may be passed over more rapidly. The laboratory process should largely be relied on, and an effort should be made so to equip the laboratory with simple, yet effective, apparatus, that every principle of importance—either because it is fundamental to an understanding of what is to follow, or because of its application in practical work—may be studied through the medium of at least one laboratory exercise. The idea is to gain the desired end by *constructive steps based upon doing rather than to attempt to reach it through the application of abstract logic*: and many portions of physics which, approached by any other method, would present mathematical difficulties beyond the powers of secondary school students, may thus be studied with considerable success. The experiments should have, wherever possible, a practical as well as a disciplinary value, and the prime requisites for the apparatus designed for the use of technical students of as mature age as those who will satisfy our entrance requirements are: that the apparatus shall not be trivial, but shall be of a character to awaken interest; that it shall be capable of definite ends and useful purposes, and that it shall give quantitative results that will compare with those used in professional work.

"The drawing and shop work shall be as practical as it is possible to make them, and in planning the work and the equipment it should be remembered that much may be left to the imagination of the college student, but for the student of our technical school no equipment is too good and no thought and

care in methods of presenting work to him is too great. In both drawing-room and shop pains should be taken to make use, wherever possible, of what has just been learned in the classes.

"In the time that is available for shop work, it is possible to give a pretty thorough course in pattern-making, foundry-work, and forging in the first year. The drawing may be made to include geometric drawing or orthographic projection and shop detail and assembly (synthetic) drawings made from student sketches.

"The work of the second year may not be so clearly defined, as there is more room for individual judgment to vary the course of study; but the fundamental idea marked out for the first year will prevail in the second. I would suggest, however, the following: Mathematics every day; a recitation in mechanism, mechanics, strength of materials, and steam, to take the place of the first year physics; and the balance of the time divided between machine design, machine construction in the shop, and mechanical laboratory which now takes the place of the physical laboratory.

"In mathematics more advanced algebra, solid geometry, and some more advanced trigonometry, with the elements of analytical geometry, may be covered.

"In the machine shop ten hours a week may be had throughout the year, which gives a pretty thorough and complete course, and enables a good deal to be done in the way of tool-making, cutter and reamer grinding, etc., in addition to a large amount of machine construction; and the course in machine design may include design in machine details, and after the strength of materials has been taken up in laboratory and class-room, design involving strength calculations.

"In the mechanical laboratory and the class-room work that accompanies it there is more room for variation than in any other point in the course. It may, however, include power measurement with indicator and brake; transmission of power with belt, rope, gears, etc., measurement of friction losses; efficiency calculations, hydraulic measurements and efficiency of water-motors; steam experiments on calorimeter; flow of steam; injector; steam pump, engine and boiler tests, etc.; and much time can profitably be devoted to strength of materials tests. Much of this work will be conducted in a less exhaustive way than if it came in the senior year of a college course, but that does not mean that it has any less value in its place. An injector test, for instance, would be run to determine experimentally how much water one pound of steam would lift, and the results would be checked by the heat balance. The calculations involving the kinetic energy of the steam as it issues from its orifice would be omitted.

"It may seem strange that I have not mentioned English in my outline of the course of study for the two year secondary technical school, but I have not intended that it should be omitted from the course by any means. In both years there would be required as a part of the laboratory work a great number of written reports, besides considerable written work in mathematics and other class-room subjects, and from time to time more extended reports from current periodicals on assigned topics. All of these reports would be carefully criticised for expression, style, and good English, as well as for subject matter; the idea being that the best way to learn English is to write it continually and write on a subject with which one is familiar. These criticisms offer the best kind of instruction.

"The following table shows more clearly than I can describe in words, perhaps, just what the proposed two-year course for the secondary technical school would contain, and I have chosen for my unit of comparison the credit hour, which corresponds to one recitation or two hours of laboratory or drawing per week for one term (one-third of the school year). In order that we may better understand the meaning of these figures, I have made comparison with the courses in mechanical engineering in the country, and I have chosen the Massachusetts Institute of Technology and the Ohio State University as institutions having representative courses in different parts of the country:—

	Secondary Technical School.		M.E. Course, M.I.T.		M.E. Course, O.S.U.
Drawing	30 Crd. hrs.	..	37.5 Crd. hrs.	..	23 Crd. hrs.
Shopwork	30	"	22.5	"	23
Mathematics	30	"	24	"	31
Physics	15	"	13.5	"	9
Physical laboratory	12	"	3	"	4
Mechanics, etc.	15	"	54	"	68
Language and other subjects not included in above....	—	"	70.5	"	48

"The comparison shows that the secondary technical school would have about the same amount of mechanical drawing and machine design as the engineering courses, and considerably more shop work. It would have the same amount of mathematics, but, of course, of lower grade; but more physics and physical laboratory. It would have only one quarter as much time devoted to mechanism, mechanics, and other theoretical branches, but it would have as much time devoted to mechanical laboratory. No time would be available for languages, literature, political science, or other similar subjects.

"It will be noted that the total of time for the two-year course is more than half the total of either of the four-year courses, and it would appear that too much has been crowded into the shorter course. The difficulty arises, however, from the fact that there is so much larger a proportion of shopwork, laboratory and drawing-room work in the shorter course—two hours of which not being the full equivalent of one hour of class-room work in a technical subject—that it appears more difficult, when in reality it is not."

There is no day course in chemistry at the Pratt Institute. The evening course, however, deserves mention both for its intrinsic interest and for the evidence it affords as to the ideas which govern the Institute. The course extends over three years:—

First year: Principles of general chemistry and of chemical combinations, properties of the non-metallic and metallic elements and their compounds.

Second year: Qualitative analysis; the separation and determination of the various metals and acids in solution and in solids.

Third year: Quantitative analysis by weight and by volume; elements of assaying.

Lectures and laboratory work throughout the three years. An evening certificate is granted upon successful completion of this course.

The subject matter, on which the teaching of principles is based, is such as would interest students from "works," the plan of study being thus similar to that which on this side has been in successful operation at the evening classes in chemistry of Finsbury Technical College, London, for many years. In the first year's class (evening course) there were found 28 students; in the second year's class 22 who had already done the first year's work; and in the third 20, who had completed the work of the previous two; and the regularity of attendance was excellent! I verified the facts. The explanation offered for such a remarkable attendance at evening classes was: (a) the practical character of the instruction, (b) the fact that men holding the three years' evening certificate readily secured promotion in their own works or obtained higher posts elsewhere. The character of the instruction may be somewhat gauged by the fact that while the head teacher of the department had had the ordinary doctorate course in chemistry, including one year at Zurich, one of his assistants was superintendent of a glycerine factory, and the other was a foreman in the Government laboratory, Naval Yard, New York—a combination of talents and experience that generally succeeds. It may not be out of place to refer here to somewhat similar figures of classes (evening) in chemistry at the Cooper Institute. There the chemical department is large and very active; the course—a five years one—consists of general chemistry and qualitative and quantitative analysis leading into manufacturing chemistry. Fifty per cent. of all the students work through the full five years' course—ten hours per week of 34 weeks per year. At the first year's work I found 37 students; at the second 19; at the third 23; at the fourth 20. The fifth

year figures were not noted. The eagerness of the students of all years was an excellent feature. As a rule they were in shirt sleeves ; many had also removed their waistcoats. This institute grants a B.Sc. degree to every student who successfully completes the five years' course.

As regards the success of the Pratt students, I was told that those who complete the courses secure employment immediately. At the close of the session 1901-2, each of the 51 day graduates (students who had completed the course) obtained satisfactory employment in a line of work for which he had been preparing. In the spring of 1903 the superintendent of the Edison Electric Lighting Company visited the institute, and on seeing the second year electrical engineering class at work offered to engage all the students at the close of the session. Statements to this effect may seem somewhat " tall " ; but they are borne out by the long list of former students, with present employment given, to be found at page 158 of the *Pratt Institute Monthly* for April, 1903.

Success has been found to depend on close contact with industrial work ; it has taken the Pratt Institute 16 years to establish the connection now formed ; and the result is seen in a full complement of students and a long waiting (for admission) list. Instances of secondary technical institutes need not be multiplied. There are many of them in the States. I have outlined what appeared to me to be the leading features of one of the best of them.

These divisions of labour and function, *i.e.*, the work of the trade school and of the secondary technical institute, are parallel to some of the changes that have occurred in machine shops ; and they are succeeding and will succeed so far as they maintain the parallelism. Machine tenders are no longer being taken from the ranks of mechanics, but from the ranks of labourers, and mechanics are being elevated to tool builders and tool designers. Each class is being advanced and made more productive, and each shares in the general advance.

Higher Institutions.—Sibley College, Cornell, and Massachusetts Institute of Technology may be taken as the leading examples of institutions of the front rank—those which prepare the " captains of industry." Let us examine a few of the features of each.

Candidates for admission to Cornell must be at least 16 years of age, and must present an accredited high school certificate, the certificate of the College Entrance Examination Board, or submit to an examination. This examination varies according to the department of the university a student intends to enter. Candidates for the course leading to the degree in mechanical engineering (including electrical engineering, marine construction, and railway mechanical engineering) must offer English history, plane geometry, elementary algebra, solid geometry, advanced algebra, plane and spherical trigonometry, advanced German, and advanced French. An equivalent of any two of the following entrance subjects or groups of subjects (*a-k*) may be offered in place of either advanced French or advanced German for entrants to the course of study in mechanical engineering. Advanced Spanish counts as two of the equivalent subjects below : (*a*) elementary

Spanish, (b) Latin grammar and Cæsar, (c) Latin composition and Cicero, (d) Virgil, (e) Greek grammar and Xenophon, (f) Greek composition and Homer, (g) physics, (h) chemistry, (i) geology, (j) botany, (k) drawing. The standard of attainment demanded in the languages, mathematics, and science, which any student presents for admission to the university, is in every case the maximum which the better class of high schools and academies are qualified to furnish. Students of advanced standing from other universities and colleges are admitted on certain conditions.

The total yearly expenses of students may vary from £60 to £100. Financial assistance is offered in the form of a large number of State (New York) and university scholarships and fellowships. Many students support themselves in whole or part by their labour in attending to furnaces, waiting at table, typewriting, and such other work as they can secure at the university or in the City of Ithaca. The State scholarships are awarded on the result of a competitive examination in English history, plane geometry, algebra and any two of Greek, Latin, French, German, and advanced mathematics. In lieu of advanced mathematics, a candidate may offer physics, chemistry, botany, geology or zoology. A State scholarship entitles the holder to free tuition (value £25) for each of four years. The scholarships take the place of a free university for New York State: 150 are annually awarded, and at any time there may be 600 State scholars in Cornell. Eighteen university scholarships at the annual value of £40 for two years are also awarded to entrants.

The courses for a degree cover four years in the Colleges of (a) Arts and Science, (b) Law, (c) Medicine, (d) Veterinary Science, (e) Agriculture, (f) Architecture, (g) Civil Engineering, (h) Sibley College of Mechanical Engineering and Mechanic Arts.

It is not worth while giving details of the organisation and equipment; it will be taken for granted that an American institution does not lack for equipment, though strangely enough Cornell does, and in view of the constantly increasing number of students, the late director, Mr. R. H. Thurston, was constantly urging "the need of a larger staff, a larger equipment, new organisations of laboratories, and new schools of engineering, and most of all an assured and increasing income." The blacksmiths' shop was particularly interesting. Fifty students were at work, their overalls sometimes being of the scantiest! A story is told of a Chicago lady who, while visiting Cornell University, found her grandson at work over a forge. A look of dismay covered her face. "Why, John, your grandfather started as a blacksmith." "It turned out pretty well," replied the student, "since it made the 'governor' a millionaire."

"Yes, but he did not have to go to college to learn the trade," she continued, shaking her head; "he got seven dollars a week from the start, and here you are paying out 25 dollars a week to stay here. I must speak to your father about it."

It is said that the student did not endeavour to explain the "new apprenticeship."*

The conditions regulating admission to courses and graduation at the Massachusetts Institute differ in some material

respects from those of Cornell. Applicants for admission are required, as a rule, to pass an entrance examination, though exception is made in the case of those presenting satisfactory certificates from the College Entrance Examination Board, or those who have passed entrance examinations at another college. In the case of persons who are past the usual student age, or who have been engaged in teaching or in technical pursuits, admission may be granted at the discretion of the Faculty without examination. No school certificates are accepted—a somewhat unusual, if not quite exceptional, rule. The obligatory subjects for admission are: Algebra, plane geometry, solid geometry, French, geometry, English, history. The electives, of which one must be chosen, are: French or German (additional), Latin, English (additional), history (additional), physics,* chemistry, mechanical drawing and mechanic arts (manual instruction).

The *Statistics of Admission in 1902-3 may be interesting*.—Of the 1,608 students of that year, 659 were not connected with the school in 1901-2. Of these, 408 were admitted as regular students of the first year upon the basis of their entrance examinations. The 251 remaining comprise (1) those who had previously been connected with the institute, and have resumed their places; (2) those who were admitted provisionally without examination; (3) those who were admitted by examination as regular second-year or as special students; (4) those who were admitted on the presentation of diplomas or certificates from other institutions of college grade or from the College Examination Board. In addition to the 408 who were thus admitted to the first year on examination, and have taken their place in the school, 70 were admitted on examination, but have not entered the school.

In the case of the 408 persons who were admitted on examination and have joined the school, the results of the examinations, embracing both those of June and those of September, were as follow:—

Admitted clear	316
„ on one condition†	75
„ on two conditions	17
	408

One hundred and four applicants were rejected. The fees are £50 a year.

Forty scholarships are given by the State (Massachusetts), and where capacity and need are shown a considerable number of scholarships is awarded by the institute. These scholarships are not in any sense awarded as the result of a competitive examination. Capacity has to be shown by the first year's work, and the need is most strictly investigated. Application is made on a form on which the names of referees are given. These are privately communicated with, and the student's financial position is closely inquired into by two members of the staff. The case is finally presented to the Faculty for consideration and decision. The minimum yearly funds required by a student to provide fees, board and lodging, and all other necessities are £130. There are 13 possible undergraduate courses, each of four years' duration.

* Physics will be transferred to the obligatory list in 1905 and thereafter.

† A "condition" means that there was failure in some subject of examination.

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|---|---------------------------|
| I. Civil Engineering. | VII. Biology. |
| II. Mechanical Engineering. | VIII. Physics. |
| III. Mining Engineering and Metallurgy. | IX. General Studies. |
| IV. Architecture. | X. Chemical Engineering. |
| V. Chemistry. | XI. Sanitary Engineering. |
| VI. Electrical Engineering. | XII. Geology. |
| | XIII. Naval Architecture. |

The time-table of the first year's work, and especially that of the first term, is very interesting because of its general character. It was explained to me that the whole staff was agreed as to the need of an advanced general education as a basis for their specialised instruction; and it was contended that, while no complaint was made as to the teaching of literary and linguistic subjects in high schools, the mind of a youth who had committed his education to the institution was in a more mature and receptive condition for further literary, linguistic, and economic teaching. In this connection the prescribed summer holiday reading of English classics also deserves mention. There is a strong inclination on the part of some of the staff to strengthen the first year's general course, and, if necessary, to make the course of studies for a degree a five-year one. The laboratories and staff are large, but the large number of students in attendance (1,600) is a subject of great anxiety. Like Cornell, the Institute has, owing to its success, reached a critical period in its history, and new developments may be expected.

For the sake of comparison with Cornell and Boston I add a few similar features in respect of the University of Illinois—an institution with over 4,000 students, 750 being in the engineering courses. The University of Illinois is a land grant and mechanic arts college, and a "free" university. A schedule of expenses may explain what "free" means. The following are (for students attending at Urbana) the estimated average annual expenses, exclusive of books, clothing, railroad fare, laboratory fees (if any), and small miscellaneous needs:—

Semester fees	\$24 00	to \$24 00
Room rent for each student (two in room) ..	32 00	„ 60 00
Table board in boarding-houses and clubs .	90 00	„ 124 00
Washing	18 00	„ 24 00

\$164 00 to \$232 00

Board and room in private houses per week 4 50 „ 6 00

i.e., £33 to £47 per annum. The tuition is practically free. Board and residence vary from £33 to £47 per year, according to a student's tastes and ability to pay. The university is situated at Champaign (Urbana), right out on the prairie, and the combined effect of the excellent weather and of the beautiful surroundings on the day of visit induced a desire to see all universities, colleges, and schools placed in the country. There are processes at work which lift such a desire out of the list of those of unattainable objects. Just as in the remote rural districts a process of consolidation is now going on, and as in many cities there is a movement to pick the children out of the slums, so I think there is nothing *bizarre* in the suggestion that Americans will so improve the network of electric cars that they will one day take town children out to schools in the country.

The equipment of the technological department is excellent.

III.

The numbers of day students in attendance at these technical institutions demonstrate a success beyond anything we know of in this country. The age and number of the students, their previous preparation, the four years' courses, and the number of graduates who remain to study, constitute a form of preparation for industrial work such as we know little of. After two days in the Institute of Technology and two evenings with some of the heads of departments, I was impressed with the view that the success of the Massachusetts Institute of Technology—and in varying, though less, degree that of other colleges or institutes of technology—is due to the following causes :—

1. Success.
2. Hard work.
3. Close touch with industries.
4. Practical character of the instruction.
5. The boldness of the students.
6. Some minor causes.

1. There is little need to dwell long on the success of these institutions. Cornell and the Massachusetts Institute are known throughout the States and Europe as educational institutions of the front rank. Their students are not drawn merely from the States of New York or Massachusetts. Of the total number of 1,608 day students in the latter, Massachusetts contributes 935, or 58 per cent. of the whole; 164 are from other New England States, 509 are from outside New England. Of these, 47 are from foreign countries. In a few cases they come from Great Britain, the British colonies, and Japan. The fame of the institution is so great that the ablest boys in the States are attracted; and thus present success is contributing to future success.

2. The work on the part of the students is severe, and especially so in the case of those of the Massachusetts Institute, for the conditions of life in Boston do not lend themselves to the same amount of distraction as at Illinois or Cornell, both of which are beautifully situated in the country and have a corporate life of work and social, athletic, and other clubs. This is on the whole a disadvantage to the Massachusetts Institute, and the staff are endeavouring to improve the social side of the institution for educational as well as recreative purposes. Their graduates must be capable of holding their own anywhere, and this capacity requires a certain amount of *social experience*.

Again, there is in each institution a considerable "mortality," or shedding of students. Some students find their general preparation insufficient, some find the pace too great, others find their funds give out, and some are advised that they have made a bad selection. In such cases the American student accepts advice and acts promptly. At every step a student's work is known, and the faculty staff of professors in each department every four months discuss fully a student's work. The middle of the third year is the critical point in a student's career. At this stage the Institute's requirements demand a final decision as to choice of work. Fifteen men in one department were at this point recently advised to change their courses or to withdraw from the Institute. I was informed that as a rule 25 per cent. of the civil engineering students drop off

at the same stage. These numbers have to be added to those who have previously "fallen by the way."

The greatest patience is extended to the students and the best advice is offered to them; but in the interest of the individual as of the standing of the institute, and of its influence on industrial work, such shedding of students is regarded as inevitable and is acquiesced in. It does not follow that the men are "wasted." As a rule, they find employment of a lower character than they were aiming at; they change the directions of their careers to their own great advantage; or they pursue a course of studies on the same lines at a secondary institution—a two-year course school.

3. There are 183 instructors on the permanent staff of the Boston Institution. Without counting lecturers, the number of instructors to that of students bears the proportion of one to nine and seven-tenths. The following table shows the distribution among the several classes of instructors:—

	1901-2.		1902-3.
Professors	29	.....	28
Associate professors	9	.....	12
Assistant professors	25	.....	25
Instructors	50	.....	54
Assistants	36	.....	46
Lecturers	40	.....	18
Total	189	.....	183

The salaries of junior instructors vary from about £100 upwards to £200 or so; assistant professors, £400 to £500; and professors, £500 to £700. The distribution of salary-fund over a large number of comparatively young men, rather than the purchase of a great name at a great price, has the advantage of distributing work in such a way that each man is a specialist, and the faculty in conference all-wise. The salaries, however, are not large enough compared with those offered in "works," and the Institute is constantly losing good men. On the whole, the staff consists of young men: academic traditions are consequently not too strong. As a rule the heads of departments and their "seconds" are permitted to engage in consulting practice. This holds true generally of technological institutions. Occasionally in such institutions this permission is abused, and the authority of the president has to be exercised; but the arrangement as a rule works well, and it is regarded as essential to a professor's vitality and a necessary and preliminary condition to the success of his teaching. Such an arrangement also brings a welcome addition to his income, and thus induces him to remain at the institution. At Boston one member of the staff of the Department of Chemistry is engaged three days a week in a research laboratory in "works"; the other three he devotes to instruction at the institution. In his department at the institute seven or eight graduate students (working for a higher degree) were engaged on the same researches as the professor's mind was exercised on at the "works." There were some differences in the presentation and methods of attack, but the problems were essentially the same. Such close alliance with works is regarded as good for the "works" and good for the students. The Department of Electrical Engineering at the Massachusetts Institute was recently separated from that of Physics, and the new head, Dr. Louis Duncan, sometime Professor of Electrical Engineering in Johns

Hopkins University at Baltimore, had for a few years past been engaged as a practising engineer in New York City. Dr. Duncan retains his office in New York, and works half his time there.

Another head of a department had 15 years' experience as a bridge engineer, and is a member of the Massachusetts Railroad Commission (equivalent in some respects to the Railway Department of our Board of Trade) and other corporations. The head of the Department of Industrial Chemistry is partner in a firm of consulting and manufacturing chemists. These are but typical examples.

Again the alumni of the institute who have established positions for themselves in the industrial world, and heads of great firms or departments of firms, are easily induced to give series of lectures on special subjects on which they are experts. It is considered a special honour to receive such an invitation; and the work is, as a rule, done without a fee. In this way the institute knows what industry is doing and what it requires.

4. In this way too, a wholesome influence is extended over the instruction; and the kind and scale of exercises become just such as would prepare a man with some confidence of fitness to tackle industrial problems. Let us look at a few types. In the Department of Industrial Chemistry, one finds among the earliest exercises of the undergraduate such an one as: "Take 3lb. of Turk's Island salt; purify; find the percentage of sodium chloride, discuss the treatment of the filtrate; write up the methods of procedure, and prices of plant required to deal with the problem on a commercial scale, taking into consideration labour and interest on capital"; and so on. Later, the students had to prepare a complete technical report on some manufacturing problem involving preparation of plans of plant, etc. A model report was given to each student as a guide. Such an exercise immediately precedes the thesis for a degree.

In physical chemistry the graduates were at work on such problems as—

(1) An investigation of the properties of a new material for the candles of arc lamps.

(2) An investigation of the manufacture of incandescent filaments from a new material.

(3) Investigation of insulating material.

(4) Investigation of the uses of porcelain in the form of resistance rods.

In civil engineering a year's work for an undergraduate would involve—

(1) Design for a plate girder bridge 60ft. by 80ft. span: complete working drawings to be made.

(2) Design for a wooden bridge or wooden roof truss: complete working drawings to be made.

(3) Design for a typical American pin truss railway bridge 150ft. span: complete working drawings to be made.

The student, under direction, of course, makes all his own calculations.

(4) Thesis.

Lectures, discussions, criticisms, are frequent at every stage of the work. A student thus trained is competent to figure out the stresses and to design a bridge; but he is not familiar enough with the details to enable him to put them together in the best way. This knowledge comes by experience only.

A valuable addition has been made to the apparatus of the mechanical laboratories at Boston in the form of a gift from the Westinghouse Air-Brake Company of an entire air-brake equipment for a freight train consisting of a locomotive and 25 cars. This makes it possible to investigate practical and important questions concerning the working of air-brakes. The boiler tests in this institution are never of less duration than 24 hours, and frequently they are continued over a week, night and day, students taking the day and night shifts in relays. The tests, it is maintained, must be on a commercial scale; it is argued that no other scale gives a sufficient guarantee of accuracy for commercial purposes.

In connection with railway engineering, the railway companies co-operate with both Cornell and the Massachusetts Institute in making provision for tests on a large scale. For example, some of the Boston thesis work has been done on the New York, New Haven, and Hartford Railroad, and the following quotation from the report of the director of Sibley College, Cornell, for 1902-3, illustrates in somewhat striking form the kind of work undertaken by students:—

"The Lackawanna Railroad Company has, as usual, given this department helpful aid in its work, furnishing engines and permitting their attachment to any desired trains on that road between Ithaca and Owego for the purpose of giving practical instruction, training, and experience to students. The work is performed under the supervision of the head of the department by seniors as leaders and juniors as assistants, and proves most profitable to all, while it is also an important element of the success of the school through its influence upon the officers of the railways. It shows the quality and competence of the sort of young man turned out by the school. Somewhat similar work, in the preparation for writing theses, has been done by members of the senior and graduate classes on railroads at a distance, and entirely independently, with great success. In one case the work was performed on the Baltimore and Ohio Railroad, the train at times making 85 and 90 miles an hour, probably the highest speed at which experimental investigation of train performance was ever undertaken."

In this connection it may be well to refer to the seminar meetings in the Department of Physical Chemistry. On my arrival in this department on the morning of my second day at the institute, I entered a room where a class appeared to be at work. I sat down and listened for a time to a discussion, which closed in about ten minutes. I was surprised to find two of the professors I was looking for, and to be introduced to other members of the staff. There were seven students and five members of the staff present. They had been discussing a problem of physico-chemical interest; and I learned that meetings for discussion of researches in progress and of published articles were held at least weekly. At such meetings the whole of the staff and the research students are present; each contributes to the discussion, and frequently in this way a student who has, so to say, got into a *cul de sac* in his experimental work is shown the way out. Discussion, criticisms, and the insight and different view-point of new minds must be of great advantage to a student in his research.

A thesis always precedes a degree. Some professors assign theses with more freedom for the student than others; but as a rule it is considered advisable not to put too big a burden on the student's back. As a matter of fact, in most cases the man is known long before he reaches his thesis, which is understood as merely lending him the last helping hand to stand and work alone.

In every department of the Institute there is a workshop and also a departmental library. The value of the latter cannot be over-estimated. As, however, its success depends so much on the departmental librarian, I have no hesitation in quoting Dr. G. Stanley Hall on the ideal departmental librarian. He is referring to the librarian of a department of educational psychology, but the "point" of the quotation is general.

"Having once settled thus each to the work which he seems able to do best, the problem of books and apparatus must be disposed of. The librarian with ample funds carefully selects from all accessible sources the title of every book or pamphlet likely to be of service to each man, and most of the library fund is reserved for such expenditure. Here the work of the librarian becomes all-important, and is utterly different from that of any kind of public or other librarian. He must be familiar with all the year books and bibliographies, publishers' announcements, etc., and prompt to get in his orders. He must communicate with other libraries, and be as eager to do as to receive favours. He generally finds many otherwise unknown references, and is always running down new material, and bringing forward weekly, if not daily, to almost all something each is glad to get. He is thus a diligent waterer, or the aquarius, of the university garden, and on his efficiency very much depends. *His work is not merely to produce speedily what is wanted, but to find out himself in advance what is serviceable.* Unlike a public librarian he has at hand catalogues not merely of books but memoirs in many archives, quarterly, monthly, or other occasional publications, so that he can tell at a glance, if he knows either author or subject, the whether and what of the many serial studies, archives, proceedings and other special monographic literature. He even provides one or two hundred reprints of all the more important theses and articles, published at his own institution, in order to utilise them as exchanges for other special matter of similar kind, otherwise unattainable. He is himself a living index of indexes, not so much a bibliophile as a worker, holding books to be not ends but means, or *best treated when soonest worn out in the service of those most competent.* His pride is not in the order, number, or small loss list, but rather in the ratio of annual use, or the total number of books per person drawing them. He realises that the library must be a servant and not a master, and that the ideal is to make everything as accessible and tempting as possible."

5. A word is necessary on the boldness and character of many students at American colleges and universities. Cases of the kind mentioned are numerous, but they do not apply to a large percentage of the whole number of students; they are in sufficient number, however, to show the grit of many of the young men; and the existence of such cases shows up a side of the university character which is long since dead in England, and which I fear is dying in Scotland, where it was somewhat common 20 or 30 years ago. Men maintain themselves by wages received for tutoring, for clerical work, for waiting at table, for librarian work, tending furnaces and lawns, acting as tram conductors, lighting street lamps, carrying newspapers, canvassing for city telephones, city directories, or for political campaigns, etc. I saw one student acting as "washer-up" for two coloured purveyors of lunch; and was informed that his remuneration consisted of his meals. Another case was described to me of three university students who "ran" a laundry, themselves doing the work of collecting the clothes, and of washing, ironing, and redistributing the clean linen. Students when they have settled their careers in their own minds and have definitely fixed their aims will borrow a large part of the necessary funds with the utmost confidence in their capacity to repay within a reasonable time. Such students are the very salt of the earth, and the nation is robust in health which rears such virile spirits. Americans respect all who can work, no matter what the character of the work, and they have the utmost contempt

for the idle, and disregard of what is to become of them. "Work or starve" is a fundamental article of the American creed.

6. In a minor degree the success of these technological institutes is due to the absence of prizes and of "ranking." Their catalogues do not contain the lists of prize and scholarship winners; and merit lists are not to be found on the notice boards. At Cornell a student may privately ascertain what his marks in any examination are; at Boston a student never knows his marks; there are no honours degrees. The rivalry of students is, therefore, of a somewhat healthy character. What then are the incentives to hard study? First, though most remote, the great prizes in the industrial world; secondly, and intimately connected with the first, the young American sees he cannot afford to waste his time; thirdly, the fact that the faculty have it in their power to recommend him into a good industrial firm. At Boston the managers of firms appear a month before graduation, "size up" and pick off the best of the students; and in Boston, as almost everywhere, there is a faculty Committee which has charge of appointments.

IV.

Commercial Schools.—The separation of functions and division of labour characteristic of the technical schools is exemplified in the institutions which prepare for the commercial world.

In the first place we have the schools which provide instruction in the subordinate mechanical processes of an office—copying, filing, etc., and which train the army of office auxiliaries—stenographers, typists, and so on. Evening commercial schools and the lower type of business schools are good examples.

Next we have the schools in which the production of technical skill is still the predominant feature; but to which a considerable degree of general education is added. The more liberal training is included to enable the operations to be carried out more intelligently, and in consequence with greater economy of time. The Drexel Institute has a two years' day course of this character; the institute, in this respect, aims at preparing women (and occasionally men) to become secretaries to lawyers, judges, physicians, and other professional men. Students with a more liberal training are quick to appreciate technical terms; they can re-phrase a sentence; they can punctuate and paragraph correctly; they can also keep accounts, look up references and collect information without detailed instructions. These schools stand as it were between Pitman's Shorthand Schools and the university.

Comparable to the institutes of technology are the university "schools of commerce," the Wharton School of Commerce in the University of Pennsylvania being an excellent example. The object of such schools of commerce is well set forth in the two following quotations from "Lectures on Commerce," by H. R. Hatfield, of Chicago University:—

"While a school of mechanical engineering is required to fit a man for the practical parts of rail-roading, there exists in that profession a far more important career for the man who is competent to direct the traffic, classify goods, fix rates, watch the coming financial depression, know the signs of coming prosperity, have insight into as well as experience with the questions of labour and the relations of employers to employes, understands the duties as well as the privileges of corporations, and who has the masterly mind to devise and carry out great financial operations involved in the management of securities on a scale hitherto unprecedented.

"To take another illustration. A preparation for banking should not be a drill in technical book-keeping, or teaching a messenger how to carry a bag of gold in safety from one institution to another. The essential purpose of education leading up to such a profession would be a training in the principles affecting the problems which necessarily arise in local, national, and international banking. There are principles of money and credit underlying these phenomena often not understood even by many bank officials. The man who has been taught how to approach such problems, to work out solutions, to apply power and grasp of large and important subjects, must, in the end, prove an infinitely better head of a bank than he who has come slowly forward from the window of an accountant or teller, and whose professional education has consisted of the chance events brought to his attention in the round of daily business. Men of this latter description will become accurate, steady, and useful to the institution in minor positions; but if promoted to high posts they will be found to know really nothing beyond the dry husks of their professional experience or a personal acquaintance with their constituency. The recruiting of high officials in this fashion accounts for the prevalence of so much lagging conservatism and ignorant timidity in regard to burning monetary questions of the day."

The Wharton School has 250 students; the course for graduation involves four years study in commerce, political economy, finance and political science. Just as industries are looking to the institutes of technology for the engineer, the architect, and the chemist, so commerce is beginning to look to schools like Wharton for the material out of which the great managers are made. Similarly, too, professors in schools of commerce are allowed to practice: Dr. Emery R. Johnson, of the Wharton School, acted as one of the United States Commissioners who inquired into the Panama Canal question, and he also codified the laws of Porto Rico.

Relation of Technical Education in the United States to Industry and Commerce.

The general effect of my visit has been to confirm what I think is the common view, that the American school system, past and present, has not been a large determining factor in the success of American industries and commerce. Such success was due, in the first place, to the virile and enterprising character of the American people—characteristics not developed by education in the narrow sense of the schools, but by education in the wider sense of the effect on the American people of two centuries of pioneering in a vast and rich but undeveloped though not uninhabited continent; in the second place, as in the United Kingdom and in Germany, to great individuals—Carnegies, Whitworths, Krupps; and, in the third place, to the constant contribution to the citizenship of the United States during the middle half of the nineteenth century of much excellent human material from the United Kingdom, and, in a less degree, from the other countries of Europe.

But the visit has also produced a strong impression that the future industries and commerce of America are being directly and profoundly affected by the schools of to-day. The last quarter of a century has witnessed everywhere a general process of aggregation in trades, businesses, and industries. The area of operations of these centripetal economic forces is larger in the United States than anywhere else, and it is believed that the only limit to aggregation is the want of men capable of managing the resulting combinations. Further, in addition to the need of capable managers of these organisations, the scale of their operations has often demanded their direction from a distance through subordinates, and that, too, not only on the result of personal observation, but on evidence supplied by reports of subordinates. Able lieutenants have become essential. Urged on by the necessity for quick multiplication

of such officers, and guided by the instinctive boldness of Americans in trying new methods, the great industrial and commercial firms are abandoning the traditional methods of waiting for apprentices to "come through," and are attempting to manufacture the junior officers, by a rapid process, out of college graduates in technology and commerce. Furthermore, the lads who came through by the traditional slow process had plenty of will and forcefulness, but the play of forces on them, while emphasising these natural characteristics, did not, as a rule, provide sufficient opportunity for the development of intellect—grasp, judgment, ability to apply general principles to details. Such men could in fact apply rules, but not the principles on which the rules were founded.

Now the Americans have a way of regarding most things as machines, and they regard the "balanced and seasoned intellect" as a piece of delicate but most efficient mechanism. They look upon the schools as workshops where the faculties of the mind can have their qualities developed and strengthened and balanced just as metals with different qualities—strength, tenacity, elasticity—can be produced from raw materials, the ores. Such a mechanical view of the mind has contributed materially to the American belief in education, and no section of the community has a greater belief in the value of education than the leaders of industry and commerce. These "captains" look to education to make the "cadets," who, with added experience in factory, field, or office, can be employed as designers, engineers, salesmen, and buyers, managers of branches, men who can clearly and agreeably present the firm's views, and who have the ability to extend the firm's business—the trusted subalterns from whom later the "captain" will be chosen.

College-Trained Men and Industry.—American experience favours the college-bred man for this purpose and for these posts. The sentiment is, however, not very old—ten years at least, twenty at most—and possibly was due originally to a few excellent college-trained men who had "come through." One experienced leader was disposed to attribute the whole movement to a Zurich Polytechnic man. Whatever the causes, the sentiment undoubtedly exists. Every institute or college of technology gives as an appendix to its report for a given academic year a list of appointments held by its graduates. These take the place of our prize lists. Naturally, an opportunity in a good firm is the prize on which such men have set their hearts. The lists of the Massachusetts Institute cover 100 closely printed pages, the list of the "1902" graduates alone occupying seven pages. Some of the lists have been analysed, and a few details from them pertinent to the subject under consideration may not be uninteresting.

Cornell Cadets.—At Cornell University from the inception in 1868 until September, 1902, 598 students had graduated in civil engineering. An inquiry into their present occupations elicited returns which show:—

I. Presidents of industrial corporations and managers.....	16
II. Chief engineers, superintendents, and managers	164
III. Assistant chiefs, resident and division engineers	75
IV. Professors of universities.....	40
V. Assistant engineers	125
VI. Pursuing allied professions.....	58
VII. Draughtsmen.....	41
VIII. Miscellaneous business	24
IX. Incomplete returns	7
X. Deceased.....	48

The graduates of Sibley College (excluding civil engineering) number about 1,300.

"Their average age, as alumni, is about 7 years; *i.e.*, they have had, on the average, about seven years in which to establish themselves and make such advance as they have actually effected. The great mass of these alumni have left college since about 1890. Of these graduates, about 900 have reported their present positions and something of their history. The reports from the remainder are slowly coming in. Of these 900, about 250 are engaged in miscellaneous manufactures, 110 in electrical manufactures, 90 are teachers, 50 are in railway work, as many more in heat-engine construction, and others in heavy machinery construction and the steel manufacture in about equal numbers. Nearly 50 are contracting engineers, 65 in electric railway and electric light work, 35 in telegraph and telephone companies, 23 in consulting engineering and expert work, 31 in naval construction and engineering, and 15 in the supervision of engineering 'plants.' About 40 have gone into branches of business allied to mechanical engineering more or less closely, and the balance are engaged in a great variety of other vocations, mainly, however, professional. Very few have found it either necessary or desirable to abandon the profession. Of the total heard from, 10 are presidents of companies, and 500 and more are in positions of responsibility and control, exclusive of the alumni engaged in teaching. Of the latter, about two-thirds are professors or principals. There are eight alumni in the army and the navy and revenue marine, and 12 in the U.S. Patent Office. Of the 35 in the telephone business, 21 are engineers or superintendents. In the electrical manufactures, of the 111 reporting, 76 are in similarly responsible places. Of the 30 reporting from the shipbuilding establishments, practically all of whom are recently out of college, 6 are superintendents, general managers, proprietors, or engineers, having charge of work. The 44 men in the contracting business are, with the exception of 4, all in responsible positions or are members of firms. Of the 250 in miscellaneous lines of business, over 180 are proprietors or officers of the establishments in which they are engaged. Of the 50 engaged in railway work, one-third are apprentices, one-third are responsible officers (usually mechanical engineers) of the corporations, and the balance are commonly designers and draughtsmen and in positions offering good opportunities to learn the business and to advance. Of those engaged in engine-building, two-thirds have positions of responsibility as superintendents, general managers, designing, and construction engineers, etc. The remainder are usually designers and in line for rapid promotion. Those in the steel business are nearly all in positions of responsibility."

Boston Cadets.—The lists of the Massachusetts Institute have not been analysed; but it is possible in another way to give some idea of the success of their students from details collected from the men who formed the class of 1893—the class of only ten years ago. The class appears to have consisted of 300 students; 23 are now deceased.

"Of the total replies received, 185 reported their incomes. The total annual income of the 185 men who reported is £114,050, ranging in amounts from £100 to £7,120. Arranging the incomes in groups we get the following results:—

Incomes.	Number.
Less than £200	2
£200—£300	32
£300—£400	43
£400—£500	31
£500—£600	20
£600—£700	21
£700—£800	10
£800—£900	6
£900—£1,000	1
£1,000—£1,200	5
£1,200—£1,400	2
£1,400—£1,600	1
£1,600—£1,800	1
£1,800—£2,000	0
£2,000 or more	10
	185

"The average annual income is £600. A figure which is perhaps more representative is £471, obtained by omitting the incomes of five figures (in dollars), which are exceptionally large. Of the total, 45 men receive incomes above the average £600, and 140 men below the average."

These figures emphasise the prospects of industrial cadets and their rapid promotion—features of the American industrial system which deserve much serious consideration.

Views of Industrial Leaders.—As soon as I ascertained that such openings for college-bred students were common, I made an endeavour to gather views from the industrial as distinguished from the educational institutions, and I interviewed the general superintendent of the Carnegie Steel Works, Pittsburg (not a college-bred man), a leading officer of the Westinghouse Electric and Manufacturing Company (a Massachusetts Institute man), Mr. Johnston, one of the partners in the Baldwin Locomotive Works, and others. At the same time, with the help of Sir Percy Sanderson, British Consul-General in New York, I was able to address inquiries to leading business men in the States. The results of such inquiries and interviews I have summarised below:—

In the Westinghouse shops and offices 160 college-bred men are engaged out of a total of 10,000 employés. At the Carnegie Steel Works, where there are 7,000 hands, there were about 100 technically trained men, 7 of the 23 leading officers being college graduates. Of 118 engineers on the staff of the Rapid Transit Railroad Commissioners of New York City, who are constructing a city underground railway, 84 per cent. had been college students; of 75 petty officers 58 per cent. were college-trained. In the Baldwin Locomotive Works, 43; on the Pennsylvania Railway lines west of Pittsburg, 52, nearly all being graduates; at the Schenectady works of the General Electric Company, 264; the Illinois Central Railroad Company employ 200 men "who are either graduates of a technical institution or have had some training in that line"; the Baltimore and Ohio Railway have employed in their maintenance of way department *since January, 1901*, 59 graduates of technical schools and universities, of whom 49 remain; the same company have this year begun to employ technical graduates in the yards and offices of the transportation department, 17 have been thus engaged, 8 remain; in the mechanical and electrical departments the same company have 24 graduates among their 559 apprentices. These figures represent the specific statements made in some of the interviews and replies; the other statements were more general, the preponderance of opinion being in favour of technical graduates as industrial cadets. My queries were sometimes differently worded, but they were to this effect in all cases:—

"Do you employ technically trained men (*i.e.*, men trained in a school of commerce, in a manual training high school, or in a college like Cornell, or in an institute like the Boston Institute of Technology)?

"(a) On the industrial or productive side?

"(b) On the commercial, or business, or selling side of your firm; and if so, what proportion do these bear to the whole number?

"(c) Would you be good enough to give your opinions as to the best form of preparation for the industrial and for the business side of your work?

"(d) Are college men preferable to boys who had only a high school education?

"It would appear to me that as the college-bred men must be 22 years of age before they are ready to enter the 'works' or the office, they must be considerably handicapped in comparison with the boy who left school and entered the firm at 16 or 17?

"If you have a type-written or printed statement of the conditions under which technically trained men are admitted to your firm, I should be glad to have a copy?"

"Perhaps you may also find it convenient to say whether there is still considerable room for the boy of ability and character who has not attended a technical institute or college to rise from the ranks to the top of the firm?"

To (a) and (b) the answer was, generally, "Yes." The replies did not all say "Yes," which is simply evidence that the sentiment in favour of college-bred men is common but not universal; that in fact we are not face to face with a resultant system but with the incomplete operations of a formative process.

(c) This question was too difficult, but a college education is favoured.

(d) The answer was "Yes," if the object in view were the preparation of the highest officers. The general opinion was that there is still room for the boy of marked ability to "come through," but that his difficulties are greatly increasing, and that useful as he is his usefulness would have been greatly enhanced had he had the benefit of a college training. Agreement was common that the college graduate will go farther than the schoolboy, and rise more rapidly because he has more behind him—a longer training and a "safety and security of knowledge." His progress will be more rapid, "notwithstanding," says Mr. Atterbury, general manager of the Pennsylvania Railroad Company, "the fact that he may be handicapped by reason of his years." "When," says Mr. Loree, president of the Baltimore and Ohio Railroad Company, "a college man has mastered the ordinary business practice his superior intellectual training will soon tell in a readier grasp, broader view, and greater general capacity, and he will rapidly outstrip the other who started earlier but with a limited mental equipment."

It is advisable to point out that apprenticeship is as loose a term in America as with us; that its use to cover "learners" of all kinds is, however, general because no better term exists. As a rule, there are three kinds of apprenticeship:—

I. The three or four years' apprenticeship system—somewhat analogous to our own, and occasionally provided to offer opportunities to sons of foremen, superintendents of shops, etc.

II. The two years' course for college-bred men. These men are put through the shops in a short time. To apprentices of this class I would propose to give the name "industrial cadets."

III. A scheme of employment for sons of friends, relatives, etc., of heads of firms and of important customers.

I fear with us III. is often confounded with II., to the disadvantage of the class who are provided for under system II. Apprentices under II. are paid 30s. per week during the period of probation; but, to the capable, advancement is rapid thereafter.

Qualities sought for in Industrial Cadets.—The demand for college men being great, managers are beginning to visit the technical schools and colleges before graduation, and to "size up" the outgoing students. One gentleman who has this duty informed me that he did not look for the first in studies, nor the first at sports, nor, indeed, for those who exhibit pre-eminence in any one direction; but made his selections from the next in order, the men of good all-round ability and of physique. Absence of certain social qualities would be a bar, not on grounds of class distinction, but of unfitness to be persuasive and tenacious amid opposition.

The men must not be "too big for their boots," not afraid of the grease and dirt of a factory, nor disposed to complain that their work and pay at initiation are beneath the dignity of a college man with such a high degree. They must not, as in cases I have known of on this side, interview the manager with a pipe in their teeth, nor adopt an attitude of patronage to the "works." Some of them do, of course, find the grease and dirt too disagreeable, and go; others—the men of grit—submit, and succeed. The early stages of an industrial cadet's work are undoubtedly none too pleasant, considering the men and their previous experience, and the pay is small; but the prospects are great for those who persist. It will be seen that the need of the mechanical expertness of the factory or shop is not a factor in the selection of a cadet, the reason being that it is not material for skilled workmen or foremen which is being selected but an executive officer who must know how things are made and how they work, but who does not necessarily require to be a specially skilled operative.

Some firms offer special advantages to their young men. Believing in college education as they do they permit young men to leave their works to attend a college, offer them employment during the summer vacation, and re-employ them when the college course is over.

Facts and Causes.—It should not be assumed that the facts reported are confined to the few institutions and the few industrial undertakings which time permitted me to inquire into. I believe that they are common to all industrial concerns and educational institutions in the States, and that the operating causes are universal. The cadets supplied are in great demand at present, because things industrial are booming; but it is believed that the demand under normal conditions will be sufficient to take care of the supply. American firms are too shrewd to demand what is not necessary or not useful; and the colleges provide what is necessary and useful, because they have realised that they are professional schools, and must turn out industrial cadets as capable of entering into practice as are graduates of medicine and law.

The "schools of commerce" (of colleges and universities) are following in the footsteps of the institutes of technology, and with the precedent in technology to point to will before very long attain equal results.

Summary.—In the earlier part of this report I endeavoured to set out a few of the features of technical education in America, dealing chiefly, and perhaps at too great length, with the methods of preparing the "captains of industry." Further on I attempted to show how this method of preparation is appreciated, and to indicate that the relationship between the schools and the industries has become one of supply and demand. It has also been explained that the quality of the supply is good, because the schools understand that they are professional schools, and that their graduates must be as capable of entering into practice as are graduates of medical colleges. A word in recapitulation may not be out of place.

The American plan involves an elementary school course until 14 years of age, four years at a high school, four years at a college or institute of technology, where instruction is industrial and not

academic in character, and two years as an industrial cadet. In the schools there is no system of prize giving or ranking to misdirect the mind of the youth from the real objective of his preparation. No premium is required of this youth on entering a "works." On the contrary, he is eagerly sought after, the managers believing that the future of their "works" depends on their ability to secure him. The pay is small—barely sufficient to live on. A young man will be 25 before he obtains a responsible post and be in a position to earn a fair living. After that, however, promotion is rapid, and prospects are great for the able and ambitious. The best ability in the States is to be found not in the professions and in politics as with us, but in industries and commerce, partly the case and partly the consequence of present conditions.

Compare this with the British plan. The number of students in British day technical schools is insignificant when compared with the American figures. Further, our day technical course is of three years duration only; and, as a rule, it is not based on a good general education of a secondary standard. The schools are not as professional in character as they might be, and the youth when he has received his diploma is somewhat diffident as to his capacity to tackle industrial problems. Further, he has great difficulty in securing a trial in a good firm, our industrial leaders having little or no faith in this kind of man. These features, the kind of product and the want of faith, react against each other; in other words, there is no supply and demand. The usual means of entrance of prospective leaders into British works is the payment of a premium; and the premium boy usually goes into works at 16 or so instead of going to college. This boy spends five years going round the workshops and the drawing office; he is not taught principles; that instruction has to be obtained at the evening technical school, or, in some rare cases, by a full three years' course at a technical school subsequent to his pupilage in the works. The premium is in most cases a perquisite of the high office to whom the pupil is attached.

There is also the case of the regular apprentice who pays no premium. This boy if very able, very ambitious, and very strong physically may succeed in reaching a post of responsibility; his aid is the evening technical school. In some rare cases he is successful in securing the assistance of a Whitworth Exhibition, and that brings instruction of a college standard.

Are we not asking too much of our youth? Let us take the case of a premium boy who leaves school at the age of 16 or 17, and has become a pupil in some engineering firm. He is out of bed soon after 5 a.m.; into the works at 6; he leaves the works at 5-30 p.m.; he is at the technical school or studying at home on five nights per week from 7 to 9-30 or 10, and he is back to bed again at 10 or 10-30. On Saturday afternoon, the strain being over, he falls asleep in his boots. This hard work lasts from the end of September to the middle of May; and the 6 to 5-30 lasts all the year round. Are we not putting an unnecessarily severe strain on our very best material? In these days of international and industrial rivalry can we afford to allow the "lad o' pairs" to sacrifice so much to the process of "coming through"? He will succeed in spite of obstacles; but he ought to reach the top with strength and facilities unimpaired: stronger not weaker from the ordeal.

Our plan of training leaders is distinctly inferior to the American; indeed, we are not making the most of one of our most valuable national assets—the character and ability of our youth. And one of the most serious obstacles is the method of paying high officers! If we thus handicap our youth and do not make the best use of our national energy, then our industries will not compete on equal terms with those of America; for in natural resources, other than men, America has more valuable assets than we.

This report has already reached too great a length; and it is impossible now to deal with technical schools other than those already referred to, and with the possible applications to our own system of some of the features of American education.

It will be sufficient to add that the general effect of my inquiry has been to confirm views previously held:—

1. That the problem of technical education is not a side issue, but an integral part of the problem of education;

2. That the solution of the problem of technical education, as of that of education, will be partial and incomplete unless the problem is attacked from the psychological as well as from the industrial and commercial point of view.

3. That the establishment of a close connection between institutions for technical education on the one hand and industrial and commercial organisations on the other is an essential factor in a successful solution of the problem of technical education as of that of industrial and commercial progress.

R. BLAIR.

Mosely Educational Commission.

Report of JOHN ROSE BRADFORD, M.D., D.Sc., F.R.C.P.,
F.R.S., Professor of Medicine in University College,
London, Physician to University College Hospital,
on American methods of instruction in the "final"
subjects of Medical Education.

I.—Relation of Hospitals to Medical Schools.

The medical schools visited were those in connection with the universities in the cities of New York, Philadelphia, Baltimore, Chicago, Ann Arbor, Boston, Ithaca, Montreal, Toronto, and Quebec. In New York City the medical schools of Columbia and Cornell Universities and of Belle Vue were seen, in Philadelphia the medical school of the University of Pennsylvania and that of the Jefferson Medical College. At Baltimore the Johns Hopkins University was visited, and at Boston the Harvard Medical School and the Massachusetts General Hospital, and at Ithaca Cornell University was seen. The Medical School of Cornell is situated in New York City, but the general University buildings are situated at Ithaca and the Veterinary Department, a well-known institution in the United States, is also situated there. At Montreal the McGill University was visited, at Quebec Laval, and at Toronto the University of Toronto. In all these cities several of the hospitals in connection with the medical schools were also visited, and it is my pleasant duty to record the extreme courtesy and kindness which everywhere was shown and the very great facilities that were offered in all the institutions for obtaining all information required.

In most of the cities the hospitals were only indirectly associated with the medical departments of the universities, and their clinical facilities were not exclusively employed for the instruction of the students of a single university or medical school. Thus in New York the Presbyterian Hospital was accessible to the students both of Columbia and of Cornell, and these students were able to attend at the Belle Vue Hospital in addition to the students of Belle Vue Medical School itself. The visiting staff of such hospitals was frequently recruited from members of these different medical schools and universities, and thus such hospitals had on their visiting staff physicians or surgeons who might be professors in Columbia, Cornell, or Belle Vue. In some instances the hospital staffs also contained members who were not necessarily teachers at any university or medical school. Mention is made of these facts in order to point out the fundamental difference in the way in which the clinical facilities of a large hospital are made use of for teaching purposes in relation to medical schools in this country and in the institutions of America and to some extent in Canada.

In some cities in the States and in Canada arrangements have been made by means of which the services of one hospital are devoted entirely to the needs of a single medical school, as, for example, the Johns Hopkins Hospital at Baltimore, the Mercy



A GIRLS' PUBLIC SCHOOL "FIRST-AID" CLASS.



Hospital at Chicago associated with the North-Western University, the Royal Victoria Hospital at Montreal, the Vanderbilt Clinic in association with Columbia, New York.

In a great many hospitals in the States and in Canada the custom is in vogue that the members of the visiting staff are only on duty for a limited period in each year, sometimes three months, sometimes six months, and at the end of this period the wards are transferred to another physician or surgeon. These regulations are apparently made by the lay bodies governing these hospitals and such conditions of service do not obtain in a hospital like the Johns Hopkins Hospital, the staff of which is entirely recruited from the teachers of the Johns Hopkins University. Where a limited period of service is the rule, the students of any given medical school in association with that hospital have access to the wards only during the period of service of their chief.

The obvious inconveniences of this system from the point of view of clinical teaching are to a certain extent mitigated by the fact that the teachers usually hold appointments at more than one hospital, and by mutual arrangement and otherwise it comes about that throughout the academic year such a teacher is in charge of wards at one or other hospital, and thus his students are able to accompany him at his visits.

It will be seen from these statements that the relation of hospitals to medical schools is often quite different in America from what obtains in this country. It might be said that here a medical school has, as a rule, grown up in association with and as a development of a hospital, and, in fact, with few exceptions the leading medical schools in London have begun as hospitals, and the medical school has, so to say, grown up secondarily. In America, on the other hand, the medical school is an integral part of the university and controlled by it, and the hospital is usually an independent institution managed by trustees, the clinical opportunities afforded by it being often shared by several medical schools. As already mentioned, there are exceptions to this, as at Baltimore, for instance; and in many of the cities visited evidence was obtained that changes are imminent, and attempts are being made, in many instances successfully, to obtain funds to erect and maintain hospitals which shall be available for the clinical teaching of the students of a single university or medical school. This undoubtedly will remove many of the difficulties that are at present experienced by clinical teachers, and will also in all probability bring the teaching of medicine more directly under the control of the university authorities, and in this way still further promote the progress of medicine.

At the present time it would seem that the medical colleges and universities as such are not directly responsible for the appointments on the staff of the hospitals that are associated with the university or medical school, although in many instances, as mentioned above, it is the custom to elect members of the university to a certain proportion of the posts at the hospital.

The system in vogue in England of clerks and dressers is one which scarcely exists in the United States, although in the Canadian medical schools it is in full operation. At the Johns Hopkins Medical School ward work is done by clerks and dressers, as is the universal custom in this country; but at Baltimore the period of service is three months, and the men filling the posts are in their

fourth or last year. In other words, the fourth-year men are divided up into four equal sections, each section serving in the office of clerk and dresser for three months. At Baltimore and in the Canadian hospitals the clerks perform much the same offices as in the English medical schools: they take the notes, and they attend their chief in his ward visits. The note-taking is necessarily under the superintendence of senior resident officers, corresponding more or less to house physicians, house surgeons, etc. In most American medical schools there are thus no student clerks or dressers, and the ward work is done by "internes," who may be said to correspond to house physicians and house surgeons. The student only visits the ward with his chief for the so-called "ward walk," or else for systematic instruction under the charge of instructors and assistants of various kinds; and all these periods are strictly limited to a certain, but variable, number of weeks. Apart from Canadian hospitals, the Johns Hopkins Hospital at Baltimore was the only one in the States where the system of clerks and dressers was in vogue.

These two points—on the one hand the limited period of service of the visiting and teaching staff, and on the other the absence of the clerk and dresser system—were those which most impressed an English teacher as indicating the main points of difference in the relations of the hospitals to the teaching medical schools.

Many of the American teachers are alive to the advantages of the clerk and dresser system, but they point out that under their system the students get the practical acquaintance with disease subsequently during their period of office as "internes," at a time, moreover, when they are more fully capable of making use of the opportunities afforded them. In the English system the student becomes a clerk or dresser at a period in his career when he knows little or nothing of medicine or surgery, and thus they argue that the great opportunities afforded him are to a considerable extent wasted. With their system the "interne" has already graduated and has acquired a knowledge of medicine and surgery which should enable him to make full use of his opportunities. The great and obvious disadvantage of the American system is clearly the fact that not all students can possibly become "internes," and thus a number of men must start in practice without the advantages that the daily life in the ward in contact with disease imparts. I was informed on numerous occasions that about half the students in the leading medical schools become "internes" subsequently to graduation either in the hospitals attached to their own schools or in some other city or provincial hospitals, so that at least 50 per cent. of the students not only graduate but pass out into practice without this invaluable experience. This is a very striking, if not the most striking, difference between the system of medical education in vogue in the United States and that followed in this country and also in Canada.

II.—Clinical Laboratories.

In most of the medical schools visited well equipped clinical laboratories were a conspicuous feature, and this was more especially the case in the University of Pennsylvania, Johns Hopkins University, the Massachusetts General Hospital, and in the University of Michigan at Ann Arbor. The laboratories contained accommodation for chemical, bacteriological, and histological investigations, and were in intimate association with

the hospitals in relation to the particular medical school. Separate rooms were usually allotted for the separate branches of the work, and there was ample accommodation for workers who desired to investigate special problems. In some instances, indeed, separate rooms were available for properly accredited workers, and, speaking generally, the degree of development of this side of medical instruction and investigation was highly advanced, and might be said to be much greater than in many of the medical schools of this country.

It was evident that there was a very general tendency in all the medical schools visited to bring clinical medicine more intimately into relation with the recent developments in the sciences of chemistry, of bacteriology, and morbid histology. Such routine examinations as blood-counts, urine and stomach-contents analyses, Widal reactions and cytological observations on effusions, were carried out with great thoroughness and with very great frequency, so that a very valuable mass of knowledge with reference to these changes in a large number of diseases was being accumulated under the direction of the officers in charge of these laboratories. In other words, blood-counts and other investigations were not made simply in the special diseases where they are necessary from a mere diagnostic point of view; but these and other elaborate methods, dependent on the recent development of science, were employed in a more or less routine fashion.

In addition to this, special investigations on various problems in clinical medicine were being worked out by a number of independent observers, and it would seem that ample facilities both in the way of material, provision of space, reagents, etc., were afforded for these purposes. Every new method of investigation that seemed to be suitable for the purpose was pressed into service.

In some universities these clinical laboratories were under the direction of the professor of medicine, in others they were in the charge of the professor of pathology. The former system had the advantage of correlating the results obtained more directly with clinical medicine, and it would seem that in some of the universities where this arrangement has been made very notable results have been achieved, quite apart from the bond of union that has been so established between medicine on the one hand and pathology on the other hand. With the great growth of pathology of recent years it has become increasingly difficult for the clinician to be sufficiently conversant with modern pathology, and yet this union must be maintained, unless medicine is to degenerate. This association of clinical laboratories with the department of medicine rather than with that of pathology affords a most useful means of maintaining the inter-relationship so necessary for the progress of both sciences. Clinical medicine as such has probably in recent years lost somewhat by the fact that *post mortem* examinations are becoming more and more the work of the special pathologist, and hence divorced from the clinician. This, although no doubt necessary in the interests of pathology, is not without its disadvantages, both as regards the teaching of clinical medicine to students and perhaps also the still more necessary point as regards the further teaching of the teacher. For these reasons quite apart from the direct utility of the methods employed the intimate association of these clinical laboratories with the department of medicine is undoubtedly to be welcomed, and the well-equipped

laboratories of many of the American universities and medical schools are thoroughly deserving of imitation.

The association of pathology and medicine is also exemplified in some of the universities by the allocation in the pathological department of accommodation in the form of separate rooms for the departments of medicine, neuro-pathology, surgery, and gynaecology. In such cases the professor of medicine, surgery, gynaecology, etc., is enabled to work up in an extremely thorough manner, with all the resources of the pathological laboratory, the material of his clinic. In some of the institutions visited large sums were sometimes expended by the professor in question on the equipment and on the researches carried on under his direction in these rooms. Great facility for work is afforded by the allocation of rooms for special purposes like this, and, although such rooms may be situated in the pathological department and be under the charge nominally of the professor of pathology, yet the workers in them were to all intents and purposes under the direction of the professor of the particular department concerned—medicine, surgery, or gynaecology.

The clinical laboratories where the routine work in association with the hospital patients was carried out were under the charge of special officers, who in many cases had assistants.

In addition to these laboratories, in many instances other rooms were provided with the necessary equipment where the students could perform ordinary analyses. Thus at the Johns Hopkins University, where the system of clerks is in vogue, a room was provided containing the necessary equipment for ordinary urinary analyses, and also with apparatus for the quantitative determination of uric acid, chlorides, sugar, and the analyses of stomach-contents. These separate sets of apparatus were arranged in lockers. The clerk could obtain the key of such a locker by signing a form and might perform the necessary analyses, but the interne would be responsible for their accuracy. No urine testing was, as a rule, done in the wards, but in a special room provided for the purpose. The interne was responsible for the accuracy of all clinical examinations.

Very complete courses of instruction in clinical bacteriology and in clinical chemistry were given as a rule. In some cases the course extended over a period as long as two terms, the class meeting twice a week for three hours. I was informed that as long a period as three months was sometimes spent on blood-work. During the period the student was attending such a class he was given a locker containing the necessary apparatus, and he had access to the laboratory and this locker during the entire day and even in the evening throughout his third year, so that he was able at any time to carry out any work he desired, or go over and amplify the class instruction. Prior to attending these classes the student would have gone through the regular course of physiology and practical physiology, and would already have acquired a knowledge of ordinary urinary examination. Such is the outline of the system in use at the Johns Hopkins University. In addition to the above arrangement, great stress is laid on the fact that during the fourth year the student also has a laboratory place and a locker accessible at all times during the day and in the evening, where he may carry out any chemical or microscopical observations he desires to make on the material obtained in the hospital. In other

words, during the third and fourth year the student always has a headquarters in the clinical laboratory, where he can always make any observations he desires. I was informed that the actual cost in materials for the facilities amounted to only £200 per annum for about 100 students at the Johns Hopkins University.

The economy in the cost of conducting these laboratories is no doubt in part dependent on the very small number of attendants and the small amount of service provided. At the particular laboratory in question I was informed that only one laboratory servant was kept, and, speaking generally, it may be said that a great deal of the routine clearing-up in laboratories of all kinds in American universities is done by the students themselves.

In some cases the resources of the clinical laboratory were almost entirely restricted to purposes of research by members of the staff and by properly accredited individuals, no undergraduate teaching being conducted. Where this was the case there was commonly another smaller laboratory available for the routine instruction of students. In some instances a small but fairly-equipped laboratory was also associated with what is usually known as the out-patient department, or, as it is frequently called in the States, the dispensary.

A great deal of the instruction of the students in clinical medicine is carried out in the out-patient or dispensary clinic, and in many of the universities visited the equipment for teaching purposes in the out-patient department was of a very high order of excellence. In some, as at the Massachusetts General Hospital and at the Cornell Medical School in New York City, these out-patient or dispensary departments had only recently been built, and their equipment left nothing to be desired. In some instances, as at Cornell, for example, they are built in the college or medical building and not in the hospital; in others, as at Boston, they are in direct relation with the hospital.

The provision of a small laboratory where blood examination, analyses of urine and examination of stomach-contents of an elaborate character could be carried out was a marked feature of some of these out-patient buildings. The students who were deputed to examine the patient and to record the history and physical signs carried out any such bacteriological, microscopical, or chemical analyses as they might deem necessary for the elucidation of the nature of the patient's disease. The results were controlled by the physician in charge, and he also verified the results of the physical examination of the patient. All the facts were recorded on a suitable card, which was indexed and stored in a special room, under the charge of a special staff of lay clerks. In such institutions the out-patient clinical material was certainly examined with very great thoroughness, and every possible opportunity seized for teaching.

The close inter-relationship between the clinical laboratory and clinical medicine, both in out-patient and in-patient practice, and the very thorough and complete manner of preserving and recording the results gained, were among the most striking impressions of my visit. In some of the medical schools visited the record of such clinical examinations as blood counts, urine, and gastric analyses were kept on printed forms, which were of a very elaborate character. These records were bound separately, and would undoubtedly contain a mass of very valuable information.

as regards the elucidation of various pathological and clinical problems. Owing to the records being bound separately the results were readily available if observations were desired on the conditions of any particular secretion or blood condition in a number of different diseases. For instance, a great mass of information on the condition of the blood in a number of separate diseases, or on the state of the gastric functions, to quote only two instances, was thus rendered available for use.

III.—The Teaching of Medicine.

In all the universities visited a four years' curriculum was in vogue, and inasmuch as a year was not devoted, as is the custom in this country, to the preliminary subjects of chemistry, physics, and biology the four years of medical study common in the States and in Canada are more or less comparable to the four years in this country subsequent to the first. It is very difficult, however, to carry the parallel between the systems of education in the two countries any further, because we are at once met with very fundamental differences both in the methods of teaching and in the curriculum. The most important differences in the methods of education may be summarised by stating that in the States the whole course of instruction is in the first place far more systematised than is the case in this country, and there is probably far more supervision of the individual student throughout the course of his studies. An Englishman is, perhaps, most struck with what I have called the systematising of the instruction. Almost every hour of the student's time is allocated to definite and specific studies, and very commonly these are carried out in very small classes under the direct supervision of an instructor or demonstrator.

In the second place, care seems to be taken that each student should at any rate make himself familiar with certain specified things and objects. For instance, in the teaching of medicine it would seem to be the duty of the instructors to take care that each student should see and thoroughly study one or more examples of the most important diseases, and this is carried to a far greater extent than is customary in this country, where it is assumed as a matter of course that the student in the course of his hospital career will necessarily have many instances of the more important maladies brought to his notice. It would seem that in the American schools this is actually made a special point of by the instructors.

In the next place great use seems to be made of drawings, lantern slides, models, and, in fact, all measures directed to bringing the objective side of the subject before the student.

Perhaps the most striking point of difference apart from the extreme systematising of the work was the diminishing importance attached to lectures formal and didactic in character. In many of the leading medical schools of the country, but by no means in all, didactic lectures on such a subject as medicine are no longer given, the prevalent view being that the lecturer cannot very well bring before the student the subject matter in a better form than that in which it is presented in the best available text-books; and thus general medicine is in many of these schools no longer taught by lectures. The abolition of lectures is very general in all the subjects of medical education; thus, for instance, professors of anatomy may be met who assert that they have never delivered a lecture. In many schools, although the systematic courses of lectures

on such a subject as medicine have been abolished, the professor gives an occasional series of lectures on some special subject of general or perhaps of special interest. The abolition of lectures, however, is not universal, and in some medical schools lectures on medicine, for instance,—two a week or more—are still given. Speaking broadly, the general trend of opinion seems to be at any rate in favour of the curtailing of lectures rather than of their complete abolition, at least in such a subject as medicine. In some subjects the abolition of lectures has been followed by the far greater development of laboratory work. In the case of medicine the place of the lecture is taken by what is called the recitation. This varies enormously in educational value in different schools. In some in the recitation the teacher meets a section of the class and a given subject is discussed between them, the teacher questioning the class and the individual members of the class frequently questioning the teacher. In fact, in many of the recitations it was very striking to see that the ordinary distinction between the teacher and the taught was very largely broken down, and that the teacher was, so to say, almost a member of the class. In such instances the recitation was based on a given subject which the class had previously read up in one or more text-books. It is obvious that such a method of instruction has a very distinct educational value, particularly if the subject is selected judiciously. In other instances the recitation was based on a given text-book, and the class was informed at a previous meeting that at the next meeting pages so-and-so to so-and-so would be considered, and in the course of the academic year the text-book was gone through almost page by page by the class. The attendance at recitations was remarkably good, and the students were earnest and eagerly took notes. Where the recitation was based on a text-book the recitation was really a means of ensuring that the student had made himself acquainted with the text, although, doubtless, in many instances the experience of the teacher enabled him to add to the information imparted by the book. The recitation in one form or another may be said to be universal as a system of instruction, and has to a great extent, and, in some instances, entirely, supplanted the lecture.

Another difference between the American system and the English lies in the greater sub-division of the subjects and the well-known large number of specialities. Thus the student will follow courses on medicine, on laryngology, on surgery, on orthopædic surgery, nervous diseases, electro-therapeutics, diseases of children, skin diseases, genito-urinary diseases, etiology, ophthalmology, mental diseases, history of medicine, and dietetics.

Another fundamental difference, already alluded to in this report, is the absence of the clerk and dresser system in the States, except at the Johns Hopkins Hospital. The student, however, is taught physical signs and the method of taking histories, and has cases of disease demonstrated to him in small classes under the charge of an instructor. The classes for instruction in case-taking, as also those for instruction in physical signs, were quite small in number, and usually may be said to have consisted of some half-dozen or dozen students in charge of an instructor. Even in these classes a certain definite number of hours was allocated to the subject; thus the class would meet for one hour for a certain

number of times. Owing to the large number of students, and the sub-division into these small sections, the number of hours that any individual student could spend in these classes was necessarily limited, but at the same time they undoubtedly gave the opportunity of grounding him in his work so as to enable him to make more use of his clinical opportunities subsequently.

So-called amphitheatre clinics, that is to say, demonstrations on selected cases by the professor, were very largely used, and the attendance on these was large, amounting in some cases to one or two hundred; in other words, all the students were at liberty to be present.

The attendance at the ward visits, or, as they are frequently termed in the States, "ward walks," was more restricted, as it was customary to divide up the students into sections of twelve or 20 or 25 men, and these sections had the right to attend the visit of the visiting physician or surgeon. Here, again, the attendance was restricted to a certain definite period, as otherwise it would have been impossible for all the students to attend in the course of their curriculum. This, again, is a great difference from what obtains in this country, where it may be said the universal custom is not only for the physicians' or surgeons' clerks or dressers to attend the ward visit, but this is also open to any of the students attending the practice of the hospital. The large numbers of the students in most of the medical schools visited prevented such arrangements as these, and seemed to entail the necessity of section visits. At the Johns Hopkins Hospital these ward visits are attended in the fourth year, and all the members of the section are actually clerks to the cases, but, as already stated, this does not obtain in other medical schools in the States, the routine ward work being done not by the undergraduate students but by the internes.

The out-patient practice or dispensary is very largely used for teaching purposes, and it is a common practice for the professor of medicine to attend on certain days and to hold an amphitheatre clinic in the presence of a large class. The patients are out-patients, they come to the dispensary and frequently are examined in small, well-equipped rooms by two students, one of whom takes the history and the other the present state. The notes recorded by the student are written by the student on suitable cards, and are then handed to the professor who examines the patient, demonstrates the signs, cross-examines the student, and points out features of interest, and discusses the case generally. This, no doubt, is a valuable method of instruction, and one greatly relied upon for instructing the students in clinical medicine.

In other branches, surgery, gynecology, and the special departments, essentially similar methods are employed, and every student seems to have the opportunity, and, indeed, to be compelled, to attend these special departments in small sections for a certain definite number of hours spread over a period of the session, and he has demonstrated to him and commonly examines for himself also a certain number of patients suffering from particular diseases. In many of the institutions visited the equipment in such special departments as those for otology, laryngology, ophthalmology, was of a very high order of excellence.

In some instances, *e.g.*, at the University of Toronto, the professor of medicine in addition compels each student in the course of his curriculum to make at least 20 examinations of sputum, blood,

stomach-contents, etc., and to record the results of these examinations. These are kept and marked and counted as part of the examination for the degree.

Special instruction in therapeutics is sometimes given in the department of medicine. A section or limited number of students attend on certain days at the hospital and receive instruction from the professor of clinical medicine as regards the treatment of disease. This, of course, is quite distinct from the systematic instruction in pharmacology and therapeutics, which is given by the special professors of these subjects.

To sum up, it may be said that the instruction in the advanced subjects in medical education, such as medicine and surgery and their special branches, is much more systematised than with us, that lectures play a comparatively unimportant part, that clinical lectures and demonstrations on patients in clinical theatres before a large audience are a leading feature, and that the opportunities of the students to obtain practical acquaintance with the phenomena of disease in the wards of the hospitals are not as great in the States as they are with us. This, no doubt, is in part dependent on the large number of students in proportion to the number of hospital beds available, but it depends also on the system of teaching adopted and on the mode of hospital administration in vogue.

A still greater difference, however, between the American and the English system remains to be mentioned. In this country it is very unusual for the student to begin hospital work and to come actually in contact with the facts of clinical medicine and surgery until his third year, or if the preliminary year spent in the study of chemistry, physics, and biology be counted, until his fourth year. He does not study the final subjects until he has completed the subjects of anatomy and physiology. It is true there are still a few schools, *e.g.*, the University of Edinburgh, where this does not obtain, but, speaking generally, it is almost the universal custom, and there can be little doubt that it will very shortly become quite universal. In many of the leading universities of the States this is by no means the case, and classes for the study of physical diagnosis are not uncommonly held not only in the second year but even at the commencement of the second year at a time when physiology and anatomy are being studied, so that the student is assumed to begin his third year with a knowledge not only of physical signs but even of such a subject as bandaging.

IV.—Pathology.

The pathological departments in all the universities mentioned were visited. The laboratories were generally fine buildings with very complete equipment, and, especially in those that had been more recently erected, ample space was provided. They were well lighted and fitted with all modern requirements. Thus in many cases incubation was done in a "hot room" of the modern type rather than in separate incubators, and there were very commonly also installations for cold storage. There were great individual variations as regards the facilities for obtaining *post mortem* material. In some of the universities the supply of material was ample; in others difficulties were experienced, and the total number of *post mortems* obtained in the course of the year was not large, and had to be amplified by material obtained from the private practice of various teachers connected with the school.

Owing to the relationship existing between the hospitals and the medical schools, *post mortem* material in any one university was not, as a rule, obtained from a single hospital, but from a number.

In many of the universities visited the subject of normal histology was placed under the charge of the professor of pathology, and in some instances it was not only under his charge but the instruction was given by him and his demonstrators. The course of instruction in histology was given in the first year, and need not be further considered here.

The subject of pathology included morbid histology, bacteriology, gross morbid anatomy, and in some cases clinical pathology, but the last was, as already mentioned above, sometimes placed in the department of medicine. The study of pathology was usually commenced in the second year, that is to say, at a time when the subjects of anatomy and physiology were still being studied. In many universities visited the first branch of pathology considered was that of elementary bacteriology; in others, morbid histology. When morbid histology was studied in the second year practical bacteriology was sometimes studied in the third, but there seemed to be an increasing tendency to begin the great subject of pathology rather with bacteriology than with morbid histology, and frequently bacteriology and morbid histology were both studied in the second year.

In some universities, for example the University of Pennsylvania, bacteriology was actually commenced in the first year, the practical course being conducted from February to March. Pathology in this case was done in the earlier part of the second year. In the Johns Hopkins University bacteriology is studied from October to January in the second year, and pathology from January to June of that year. The course of bacteriology at the Johns Hopkins University is one taking the whole afternoon, 2 to 5, and is preceded by half-an-hour's talk on the life history of the organisms, etc., that are being considered on that afternoon. At Harvard a very remarkable system of instruction is in vogue in such subjects as anatomy, physiology, and pathology, which is known as the "concentration system." Under this system the entire time of the student is devoted to the consideration of a single general subject such as anatomy, physiology, pathology, as the case may be, and the whole course of instruction is carried out in the period of four months. Thus at Harvard pathology is studied in the first term of the second year, and it may be of some interest to give a short outline of the course.

The practical pathology is done daily from October to February from 9 a.m. to 1 p.m., and after a short introductory talk at 9 a.m. the sections of the morbid tissues are given out ready for mounting. The gross morbid anatomy is taught from fresh and from preserved material, and small classes or sections of the students are called out in turn from the class and especially instructed in gross morbid anatomy, and this instruction is accompanied by the demonstration of microscopic preparations of the tissues actually examined. At 12 o'clock a lecture on general pathology is given by the professor on five days a week. Students in groups of ten assist at the *post mortem* examinations at the different hospitals in association with the university, and they are taken away from the class for this purpose as opportunities occur. A further course of special instruction of two weeks' duration is given on the diseases due to

animal parasites, and this course consists of lectures and of laboratory work. In addition to these courses other short courses on neuro-pathology and on surgical pathology are held. The bacteriology is studied during the same period as that during which morbid anatomy is studied, but in the afternoon instead of the morning. Thus the whole of the student's time from 9 in the morning until the evening for some four months is devoted to the study of pathology. The subject of bacteriology is taught by a separate professor, and I was informed that he had seven assistants to deal with a class of some 115 students.

In all the universities visited the equipment for the practical instruction of bacteriology, morbid histology, etc., was extremely good. Thus at Harvard I was informed that 175 oil immersion microscopes were available for teaching purposes, and that it was customary for the students to pay a rent for these rather than to purchase their own. Where the classes were large it was the custom to divide them into sections, and hence it was necessary for the course to be repeated in order to fit in with other courses, but in all instances the proportion of instructors and demonstrators to students was approximately one in ten.

A most important feature of the system of instruction everywhere was that a very complete record of the students' work was kept by the demonstrators and instructors, and a report made to the professor by these gentlemen.

In many, if not in all instances, attendance at these practical classes was compulsory, and I was informed at some of the universities that if a student missed three attendances in such a practical class without a legitimate excuse he was liable to lose the entire year. Certainly the attendance was remarkably good, and the enthusiasm and diligence of the student quite remarkable.

Another striking feature of the practical instruction, both in bacteriology and in pathology, was the fact that unknown cultures and unknown sections were given out frequently, sometimes once a week, and the students required to diagnose the organism present, or the nature of the morbid lesion in the section. This was done from quite an early period in the class instruction, and was not used as an examination test but as a mode of instruction. For example, on one day in the practical bacteriological class at Harvard the work for that afternoon consisted in studying the pneumococcus and the sputum of pneumonia, and in the second place in continuing the work on an unknown organism which had been given out at a previous meeting; the students were also requested to make cover-glass preparations, and to determine the changes in morphology and spore production in old cultures. The principle of working at an unknown organism as part and parcel of the usual routine instruction was a very general one in all the universities visited. A remarkable instance of the extent to which this method was observed in the pathological department of the University of Michigan at Ann Arbor, where I was informed that it was the custom for all the sections handed out to the class of morbid histology to be, so to say, unknown; that is to say, their nature was not revealed to the student, and he was expected by examining them and drawing them in the course of the afternoon's work not only to record accurately the minute features of the morbid histology, but also to arrive at a knowledge of the nature of the specimen.

Lectures are used to a varying extent in the different universities in the course of instruction of the subjects of pathology and bacteriology. Thus, at Harvard some 50 lectures are given on bacteriology and a larger number in pathology. At Jefferson College in Philadelphia some two lectures a week are given on general pathology, and further lectures in the third year on special pathology. At the Johns Hopkins University the professor of pathology gives two lectures a week on some special subject, such as immunity, from October to January. Recitations are very largely used in this subject. In some instances no formal lectures are given on pathology.

The section method, that is to say, the division of the class into small numbers under the charge of an instructor or demonstrator, is in operation throughout the States for the practical teaching of almost all subjects, and especially in such subjects as bacteriology and morbid anatomy, *post mortem* work, etc. This system is also largely used in Canada, and in the new buildings of the University of Toronto an interesting development on these lines has taken place in the departments of physiology and pathology. In these departments suites of rooms communicating with one another and capable if necessary of further division or enlargement by the putting up or taking down of partitions have been provided, and the class work of the separate sections is, therefore, done in separate rooms under the charge of a demonstrator or assistant.

The main difference of the system of instruction in Canada from that obtaining in the States is that in the former bacteriology and morbid anatomy are studied at the same period of the curriculum as is the custom in English schools, that is to say, during the third and fourth year.

In the McGill University, Montreal, the chemistry for medical students is under the charge of a special professor of chemistry, who teaches the subject entirely from the standpoint of medicine. As he is not only a chemist but also a graduate in medicine, the objects of the medical student in studying chemistry are steadily kept in sight throughout the course. The professor of medical chemistry not only deals with elementary inorganic chemistry and organic chemistry, but he also gives instruction in applied medical chemistry, and deals with such subjects as the analysis of urine, blood, stomach-contents, practical toxicology, and the chemical side of sanitary work. A considerable proportion of the demonstrators who give the instruction in the practical classes are also graduates of medicine.

In many of the universities the system of instruction in pharmacology and therapeutics is more specialised and more amplified than is the case in this country. In addition to practical instruction in pharmacy and materia medica, lectures and experimental demonstrations are given on pharmacology. The lectures are given to the whole class, but for the demonstrations the class is divided up into small sections, in some cases not more than eight or ten men, and the fundamental experiments of the actions of drugs are shown. Optional or elective classes of a more advanced character where further experimental work is done are also common. Special instruction in therapeutics is given very frequently by a special lecturer or professor, and in some instances ward visits are attended, where the whole clinical instruction is devoted to the consideration of the treatment of the

patient. This affords another illustration of the great systematising of the courses of instruction that has been so often alluded to.

In addition to the compulsory courses in most universities there are a number of optional courses, and in these instruction of a more advanced type is given. Not only is this the case, but very frequently students, and even junior students, are deputed to do pieces of research work under the direct supervision of the professor of the department, and I gather that this work would count towards the taking of the degree. In some instances—as, for example, at Harvard—a student can elect in his fourth year to take a special subject for research work, as physiology, pathology, or bacteriology, and devote a great part of his time to this. If this research work is of a satisfactory character he may receive his M.D. for it. These students are necessarily unable to devote their time as fully to the compulsory subjects, and especially to the clinical subjects, as is the case with the ordinary students, but it must be remembered that in the States the M.D. does not give the right to practise, and such men are usually intending to devote themselves to the study of these subjects as their life work and have no intention of practising.

In the University of Chicago, which is undergoing very rapid and extensive development, and has received very large donations, there are some differences to be observed as to the regulations affecting the curriculum. The year is divided into quarters of three months' duration, and the academic year occupies three quarters; in other words, there is a nominal vacation of one quarter, and each professor is entitled to one quarter's holiday. He may, if he likes, forego this for a number of years, under which circumstances it accumulates and he becomes entitled to prolonged leave, *e.g.*, a year. During the nominal vacation courses of instruction are held, and so the student can if he likes get through a four years' course in three years, and can pass his examinations at the end of the third year, but he is not, however, under these circumstances, entitled to receive the degree until the termination of the fourth year from his entry. Further, the courses are repeated during the academic year; thus, for instance, pathology is repeated three times a year, and hence a student can enter at the commencement of any quarter. The repetition course is not necessarily given by the professor; it may be done by one of his assistants. Further, the University of Chicago will accept students from other approved institutions, and if the reputation of these is of a high order the course of study at the University of Chicago may be shortened. Thus I was informed that the University of Chicago is prepared to give the degree of M.D. after one year's study at the University of Chicago, provided a satisfactory course of study has been previously followed at another approved university. Great developments in the way of laboratory buildings are taking place in Chicago, and a special building for the study of infectious disease and a hospital for cases of diphtheria, scarlet fever, and measles have recently been erected, investigations on the pathology of these diseases being at the present moment in active progress. Schemes are afoot both at Chicago and at Harvard for the establishment of advanced schools for the study of medicine which will only be open to graduates in medicine of an approved university, and will be mainly devoted to research work in medicine, or other research

work in what are spoken of in England as the final subjects in medical education. It is probable that special hospitals in direct relationship with the universities will be established for this purpose, and large funds for these objects have in some instances already been obtained.

No very useful purpose can at present be served by comparing the examination systems in vogue in the States with those obtaining in this country, as the conditions are so entirely different in that the degree granted by the universities confers no right to practise; the latter is obtained by passing a State examination under the supervision of a special Board. In all the universities the manner in which the student has followed his courses of instruction is a determining factor in deciding whether he shall or shall not receive a degree. Further, it is very usual for the examination in each subject to take place at the end of the course of instruction in that subject, and hence the examination, particularly in what are called in this country the preliminary and early subjects, is to a large extent a piece-meal one. As regards the final subjects—medicine, surgery, and obstetrics, in some instances the student is examined in all at one time.

The fundamental and far-reaching difference between the American and the English systems lies in the fact that the record of a student's work, recitations, laboratory classes, ward work, is kept, and very largely, and in some cases almost entirely, determines the result. A very prevalent custom is not to admit him to the written or practical examination often held at the end of a course, unless the report of his class work is satisfactory. Such written or practical examination when held is conducted by the professor himself, but the report of the class work is made by the instructor or demonstrator in charge. All the student's drawings, laboratory notes, clinical records of cases seem to be marked and pigeon-holed.

In many universities if the student is rejected in three branches he loses a whole year and the courses have to be repeated. It is difficult to form an estimate as to the number of students who fail, but in the leading universities the proportion would seem to be small compared with what obtains in England.

To sum up the general impressions, it may be said, first, that the enthusiasm of the teachers and of the students was one of the most striking features of my visit. Secondly, all the leading universities had exceedingly fine and in some cases magnificent laboratories, and the equipment was of a high order of excellence. Thirdly, in the teaching of the non-clinical subjects the laboratory and practical side was especially developed. Fourthly, systematic instruction by lectures seemed not to be in general favour. Fifthly, even in the final subjects, medicine, surgery, etc., the teaching was extraordinarily systematised, but, speaking generally, the students did not have the clinical facilities they obtain in this country. Sixthly, the scientific investigation of disease in clinical laboratories had reached a very high order of development. Seventhly, the teachers in this country in such subjects as pathology might well consider whether some of the methods in vogue, such as the early study of bacteriology and the custom of giving the class unknown organisms and sections to identify, and the careful record of the student's work, are not features thoroughly deserving of imitation.

Mosely Educational Commission.

Report of Mr. HARRY COWARD, Head Master of the Knowle Council School, Bristol; President of the National Union of Teachers; Fellow of the Educational Institute of Scotland; Member of the Bristol Education Committee.

The time was singularly opportune for sending this Commission to visit the schools and other educational institutions of the United States of America. The education authorities throughout England and Wales have the power of making new departures, of co-ordinating the work of one kind of school with that of another, of supplying the deficiencies of any branch of education in their localities, and of furthering and perfecting the training of teachers; any knowledge, therefore, which will aid such committees in solving the difficulties with which they are confronted, in continuing what is good and eliminating what is obsolete or bad, in selecting fresh departures wisely, is bound to be welcomed by such bodies. Public opinion requires educating so that the authorities may have its weight behind them in resisting short-sighted opposition to the improvement of our educational machinery; and knowledge of what is being done in other parts of the world ought to be a large factor in producing a sound, healthy opinion in this country. Indications are not lacking that our leading public men are beginning to realise more and more that there is a close connection between the welfare of the country and education, and that to secure the prosperity of the State the system of education must be made as good, as complete, as up-to-date as possible. It is also being realised that expenditure of money on education is the wisest investment the nation can make, provided the expenditure be wisely directed and applied.

It may not be amiss here to give a few leading facts culled from the latest returns. The total population of the United States is given as 78,544,816 persons; from 5 to 18 years of age, as 22,261,863; and the number of pupils enrolled in the public schools as 15,925,887. This gives the percentage of 71·54 of all persons between 5 and 18 years of age as being in the public schools. In addition to these about a million are said to be educated in private schools, a term in America which includes what would be called voluntary schools and private schools in England. The total number of teachers in the public schools is 439,596, of whom 317,204 are women. The total expenditure per pupil is just over 21 dollars, £4 6s. It is always to be remembered that there is no body controlling or financing the education of the United States as a whole, each State being entirely independent of any of the others in the arrangements it makes for education. Thus we find considerable difference between one State and another in the details of education. Notwithstanding this, however, it is somewhat surprising to find that the school system has become fairly uniform

throughout all the States, made up of the kindergarten for children from 4 to 6, elementary schools for those from 6 to 14 (this being usually divided into the primary grade for children from 6 to 10 and the grammar grade from 10 to 14), the high schools for children from 14 to 18 and upwards, followed by the State university. All these institutions are absolutely free of expense to the parents for tuition and with very few exceptions indeed books and materials are also free.

The Commission landed in New York on October 10th, and the members returned at various times. I sailed again on November 25th, so that my actual stay was six and a-half weeks. My tour extended through New York, Washington, Baltimore, Philadelphia, New Haven, Boston, Niagara, Chicago, Indianapolis, Dayton, Pittsburg, and back to New York. At most of these towns I was able to make excursions to smaller places within easy reach of them. On the afternoon of our arrival we were entertained at a reception at Columbia University, which has over 5,000 students, and has grown out of the old King's College, founded by Royal Charter in George II.'s reign, and on the Sunday many of our party received a cordial reception at several of the big Sunday schools belonging to the various religious denominations, and were struck with the vigour and spirit with which they were conducted. On Monday we were graciously received at the City Hall by the Mayor, Mr. Seth Low, and a visit to the Natural History Museum gave us a good example of how the Board of Education combines with the public institutions to further the cause of education. A specimen lecture illustrated by the most beautiful lantern pictures I have ever seen, such as are given weekly free to the public, was given by Professor Albert S. Bickmore. We were told that over a million attended these lectures last winter, the expense of which is borne by the Board of Education, the museum providing the building, apparatus, etc. The lectures give in a popular form phases of American life, scenery, manufactures, productions, history and geography, not only with a view to increase the knowledge of the people, but with the distinct object of cultivating a high spirit of patriotism. If, however, we may judge from what we see and hear of the New York citizen, he already believes New York to be in all respects the best city in the world. "The best on earth," is the usual description of any article you wish to purchase, or of any building or sight to which your attention is drawn.

On the evening of the 12th we were entertained at dinner by President Murray Butler at Sherry's, where we met many of the public men of the city. Running through the speeches was noticeable the high estimation in which education is held in New York by the large employers of labour, merchants, and public men in all walks of life, all of whom emphasise the importance of maintaining the common school—a term used to embrace all schools from the kindergarten to the high schools—under the control of the public authority. On Tuesday the work of visiting the schools began, and I should like to place on record my hearty appreciation of the kindness and courtesy we received at the hands of the teachers of all the schools we visited.

We very soon found that the New York schools are very large, the latest opened containing nearly 5,000 scholars, although this is exceptional: the average elementary school usually contains about



A NEW YORK KINDERGARTEN SCHOOL.



2,500 scholars, made up of three departments, kindergarten, primary, and grammar. The buildings are on four, five, or six floors, with a playground in the basement, and often a good gymnasium on the top floor. No pains seem to be spared to secure good electric lighting, heat, and ventilation, though in one or two schools we visited the ventilation did not seem any too perfect. Everybody acknowledges that these buildings are too large, and that the education of the children would be much better conducted in smaller buildings. The reason given for these huge structures is the enormous price of land, but I am told that land is quite as dear in London as in New York, yet the London School Board has not fallen into the same error to any great extent. The buildings of New York are magnificent structures, and no expense has been spared to secure the very best that can be obtained. We saw some buildings that cost from £40 to £50 per child to erect, a sum which would frighten our school authorities at home.

In the equipment of the schools we are also far behind our New York friends. Nothing "shoddy" or mean is found inside the New York school. "Whatever is the best, is the best for the school," is the motto carried out regardless of expense. On the front wall facing the scholars, and for some distance down each side, there are fixed slates of an excellent quality for teaching purposes. No easels or blackboards were seen in any school. The walls had an abundance of pictures and illustrations, but no maps were displayed, each room being supplied with a complete set of maps and a case to contain them. The principal of each school has an electric bell to each room in the school, and a speaking tube to every floor. He is also provided with an office and a clerk. There is a good wide platform for the principal at the end of the main room in each department, well supplied with chairs, tables, etc., of a good handsome appearance, little things in themselves, but calculated to surround the office with dignity, and consequently influence.

In addition to the ordinary subjects usually found in elementary schools German is taught to the upper classes. The classes are smaller than we generally find at home, it being unusual to find classes with much over 40 in them. In fact, the average for the whole of the New York elementary schools was just 40 children per adult teacher for the last year, not reckoning the head teacher or the visiting teachers, where there are such. In going through the classes one noticed the large amount of time devoted in every lesson to teaching the children to talk about and discuss the subject of the lesson, and although, perhaps, less ground is covered, there is no doubt that the children do speak with a freedom and correctness which our children at home often lack. It did not strike me after visiting a great many schools that the actual work, the writing, the spelling, the arithmetic, etc., was quite as good as we should find in the best schools of a similar character at home, but the composition and the readiness of the children to talk and furnish their own ideas were better. One of the great problems the New York Board of Education has to face is dealing with the large influx of foreigners—Jews, Italians, Russians, Roumanians, Chinese, and many others come every year in large numbers—out of whom American citizens have to be made, and it is interesting to note the various agencies employed to bring this about. Patriotic songs are sung. The American flag is kept well in sight *inside* every school, and by the New York State Law is

kept flying during school hours over the *outside* of every school, while every morning the flag is saluted and a form of words repeated by all the children pledging fidelity to the flag, as a part of the opening service. The authorities claim that in a very short time they turn these foreign children into American citizens, as proud of America and her liberty as those born within her borders. Boston and Chicago have the same difficulties to overcome. It is not only in the schools that the Board of Education instructs the foreigner to love America and American institutions. While walking through the foreign quarter of the city one evening, we noticed an immense crowd round a large screen on which lantern pictures were being shown of American scenes, public buildings, etc., and this we found was another way, paid for by the Board of Education, of educating the grown-up as well as the younger foreigners.

The salaries of teachers in New York City have been settled by State law, and cannot be altered by the Board of Education. Female assistant teachers begin at 600 dollars (£120), and rise to 1,240 dollars (£248), though under some special circumstances they may rise to 1,440 dollars (£288). Male assistant teachers begin at 900 dollars (£180), and may rise to 2,400 dollars (£480). Head teachers or principals (women) rise to a maximum of 2,500 dollars (£500), and men to 3,500 dollars (£700). In the high schools the assistant women teachers may rise to 2,500 (£500), and the male assistants to 3,000 (£600), while the principal or head teacher gets a salary of 5,000 dollars (£1,000). A considerable agitation has lately arisen in New York to get these salaries increased. They, however, are much better than at any other city in the States, and, even with the extra cost of living, are much higher than teachers' salaries in England.

The high schools of New York include, as compulsory subjects, English, history, mathematics, a foreign language, biology, another science, physical training, vocal music, drawing, voice training, and declamation; outside these there is a wide range of elective subjects, including Latin, Greek, commercial subjects, such as stenography and typewriting, book-keeping, economics, and many others. Although the course is nominally over four years bright pupils often complete it in three and a-half years, while the slower ones take as much as five, or even six years, the State law allowing free education up to the age of 21. In addition to these general high schools there are one or two, such as the De Witt Clinton High School for boys, where some 3,000 boys are receiving a distinctly commercial education, and the Girls' Technical High School, a special feature of which is a shortened course of two years, intended to equip girls as stenographers, typists, book-keepers, saleswomen, buyers, and numbers of other wage-earning callings. I spent a morning in the Wadley High School for girls, and found 2,500 girls of from 13 or 14 to 18 and upwards located in one of the best buildings it has been my good fortune to see, which was built at the cost of £140,000. Dr. John Wight, the principal, is aided by a staff of 105 teachers; all the pupils have graduated from the elementary schools. The principal's salary is £1,000 a year, two of the male assistants get £600 each, while the salary for the women assistants begins at £140, rising by £10 increments to £200, then by increments, under certain conditions, of £16, to a maximum of £380. The first woman assistant gets a salary of £400, rising to £500.

In most of the schools of New York there seemed to be considerable display of the pupils' work, and in some this was carried to such an extent that there was more than the possibility that too much attention was paid to the kind of work that pleases the eye—finger work, drawing, painting, and colouring leaves, flowers, and plants, to the neglect of more substantial subjects. The free libraries of New York co-operate with the schools in providing excellent materials for the children to read. In one department for 1,200 boys, £48 per annum was the sum allowed to be spent in books for the school library, and in addition to this provision, children's rooms and libraries are provided in connection with the library system at convenient centres. The Public Health Department sends a doctor and a nurse to every school each day. Chicago and other large towns have a similar system, and these are instances of how the various public bodies co-ordinate their work with that of the Board of Education. It will perhaps be possible in our own country, now that the Municipal Councils have control of the schools as well as public libraries, museums, art galleries, baths, parks, etc., to utilise them all in connection with the schools more than has been the case in the past. I spent some time in examining the school books used, not only in New York but in the other schools in the States, and here again there is no "cheese-paring" policy adopted, but the books supplied in arithmetic, history, geography, etc., are the ordinary text books of the country, well bound, and at considerable cost, with almost the entire absence of the cheap flimsy books sometimes forced into the schools in our own country. This does not apply to reading books. I think the reading books generally in use in our better elementary schools in England are equal to those in America, though the classes have a greater variety than we have. Each child there, however, takes care of his own sets of books, carries them home and uses them there. Indeed, home lessons seem to be general except among the very young children.

The City Normal School for the training of teachers had 217 students when we visited it, all having been graduates of the high schools before entrance. Of these only six were men. The course extends through two years, out of which the last six months are spent as substitute teachers in the schools, a report being furnished each week. In addition to passing the examinations for license to teach, the report on the teaching during these six months must be favourable, or they may be compelled to take another six months before receiving a licence to go out as ordinary teachers into the schools. There is also the Teachers' College at Columbia University, with a four years' course, though this is reduced to two for the graduates of the Normal School. This college seems to hold a special place in the system of training of teachers, inasmuch as considerable specialisation takes place, and teachers are sent out to training colleges, normal schools, high schools, as well as elementary schools, as teachers of special subjects, such as manual work, kindergarten, mathematics, pedagogy, and in the course of our travels we found many of the old students of this college at work in various institutions. The Dean is Dr. James C. Russell, with whom I had a long conversation on the work and aims of the college. There are over 600 students, and degrees of B.Sc. and D.Sc. in pedagogy are granted. Courses are also so arranged that teachers can attend them after

the school hours, and I met several teachers who are thus getting advantage of a university course. A similar school of pedagogy exists in connection with New York University, as well as at most of the universities in other towns. Of Columbia University and New York University I must leave my colleagues to speak in detail, as also of our visits to the technical schools and the famous Pratt Institute at Brooklyn.

I spent several evenings in visits to evening schools, which are of three kinds—elementary, high, and recreative. At one of these, situated in the foreign district of the city, I had a good opportunity of watching how foreign pupils were dealt with. Thirteen hundred boys and men were present, almost the whole of whom could only speak a little English, or none at all, and most of the time was spent in teaching the language, coupled with every device to give the scholars a love for, and interest in, America. In one class of 29 there were 18 Russians, five Roumanians, and six from various other countries; some of these had been only three or four months in New York, others a year or so, while one had only landed the day before. These strangers soon pick up the idea that if they want to do well in New York they must learn English, and it was a good sight to see them all eager to help themselves and one another. From this school it was a great contrast to visit the East Side Evening High School for girls, with Miss Maclay as principal teacher, and a staff of 24 assistant teachers, teaching over 750 young women, from 15 to considerably over 20 years of age, all of whom had graduated in the day elementary schools, but had been obliged to go to work instead of passing on to the day high school. The course of study was distinctly high school work, and so arranged that there was considerable liberty of choice of subject. In two or three rooms I saw no less than a total of 60 typists at work under competent instructors. Another class was studying English literature, which I was allowed to take for about half-an-hour. There were classes, too, in commercial book-keeping, higher mathematics, German, Spanish, French, chemistry, physics, rhetoric, and drawing. I also visited one of the evening recreation centres, with 700 boys present. Two or three rooms were devoted to all kinds of quiet games, draughts, chess, dominoes. In another room some 40 or 50 were studying any kind of subject they liked, to improve themselves—arithmetic, shorthand, foreign languages; no lessons were given, but two or three teachers walked about and gave help wherever it was desired. In the gymnasium all kinds of physical exercises were being carried on, again with competent instructors; while in the corner of the main entrance hall a lady sat at a table changing books for boys, these books being supplied from the free libraries. Plenty of noise at this centre, but good humour everywhere, and underneath it all education, hardly apparent to the teachers or the lads themselves, of no little value was being carried on.

New York City spent last year on evening schools considerably over £100,000, with over 21,000 in average attendance. Its vacation schools cost £10,000, and its vacation playgrounds nearly £12,000. Certain playgrounds kept open all the year cost £5,000 in addition. In the day schools the total cost per child was over £9 on the average attendance.

I ought not to leave New York without expressing thanks to Mr. H. Rogers, chairman of the Board of Education, who spent one day

in driving the Rev. A. W. Jephson, Mr. G. J. Cockburn, and myself to several schools, lunched us at the Athletic Club, and finished up by taking us to the offices of the Board of Education, where Dr. Maxwell and his assistants courteously showed us how carefully every branch of the work is organised. Organisation in detail is reduced to a fine art, and there is no doubt that the schools of New York are, at least, not burdened with too *little system* in their management.

The city is suffering, like Chicago, Philadelphia, and several other large towns, from a deficiency of accommodation. In New York many of the schools are working "double shifts," with, however, two sets of teachers, to overcome the difficulty of supplying *some* instruction to the many thousands for whom at present there are no school places. It ought to be said, however, that New York has several large schools in the process of building, the completion of which has been delayed owing to strikes and labour troubles. New York has done but little for the defective class of children, only one centre being opened, and is thus much behind Philadelphia, Boston, and Chicago in this respect, while London, Manchester, Bristol, and other large towns at home are well ahead of any of them in this particular branch of education. We were very struck in New York with the intense belief that people of all classes seem to have in education, and with the determination to spare no expense in placing a thorough education within the reach of all. We left the city feeling that, although we had learnt much, we could have spent a much longer time profitably in this great bustling, busy, although in some respects ugly, city.

A journey of over 400 miles brought us to Washington. This is a delightful city of about 300,000 people, of whom nearly one-third are coloured; and here we had an excellent opportunity of seeing how the great problem of the coloured citizen is being dealt with. In New York and the Northern States generally the law allows coloured and white children to attend the same schools, and in almost every school a few coloured children may be seen. Separate schools for our coloured brethren, however, are found necessary even there, which the large bulk of them attend. In Washington and generally in the Southern States, the coloured children are not yet allowed to attend the same schools as the whites. While this is the case, the policy has been adopted of thoroughly educating the coloured folks, giving them in their own schools, under coloured teachers, exactly as good an education as they give to the others. To us of course it seemed that the easiest way to do this would be to allow them to attend the same schools, irrespective of colour, but we soon found out that public sentiment, both among the coloured and white population, is strongly against this. Washington does not make so much "show" of its school work as New York, and the schools are much smaller and the buildings not so pretentious; they are free both for fees and school materials. There are two excellent manual training high schools—the McKinley for white students, and the Armstrong for coloured. No trades are taught, but I gather from the students and instructors that many of the young women can get good employment in dressmaking, millinery, typewriting and office work, while the young men get shortened terms of apprenticeship as machinists, engineers, draughtsmen, architects, and the like, if they have fully graduated through the manual high school. Space forbids me to more than mention the

kindness and hospitality we received in this beautiful city, the great event being our reception at the White House by President Roosevelt on Wednesday, 28th October, who had invited about a dozen of the leading educationists to meet us; or to more than note the splendid buildings, of which perhaps the Congressional Library, the Government Offices, and the George Washington monument are the most striking. Some of our party went from Washington on Thursday night on a delightful excursion, over 200 miles, to visit the Coloured Schools and College at Hampton, rejoining the main party at Philadelphia on Saturday. I, however, went on with a party to Baltimore to see the schools and the celebrated Johns Hopkins University, whose many buildings are scattered over the town. It is said that the post-graduate work of this university is the finest, most extensive, and best organised of any in the world; but I must leave some of my colleagues to write a detailed account of the visit. The President of the University entertained us at luncheon at the Maryland Club, inviting a few of the professors and others to meet us. We spent some time in the Boys' High School, or City College, as it is called, and the Girls' High School, the former for 900 boys and the latter for 1,300 girls; both are fed directly from the elementary schools, and are doing excellent work. The graduation certificate of the former is accepted by the Johns Hopkins University as entrance for the undergraduate course without examination. Everywhere easy co-ordination and co-operation were seen between all parts of the school system. Some of our party remained a day or so longer at Baltimore to further investigate the Johns Hopkins, while the rest of us went on to Philadelphia in the evening of the 22nd October, and spent Friday, Saturday, and Sunday in that historic city, which has nearly a million and a-half inhabitants, ranking third in size of the towns of the States. The Municipal Council makes the appropriation of money for school purposes to a Board of Education which has the spending of it, and which takes general charge of the schools. This latter body is elected or nominated by the Court of Judges—another instance of what struck us as strange in a democratic country, the non-popular election of a governing body. In New York and Chicago the mayor chooses the members of the Board of Education. Philadelphia has considerable deficiency of school accommodation. The classes in the schools are larger than in other places; in one I found classes of 52, 60, and 72. The salaries of the teachers are very much smaller than in other large towns, the result being that considerable agitation has been aroused on the subject. The Board of Education has experienced some amount of difficulty through the Municipal Council cutting down the appropriations for school purposes. It possesses, however, many good schools, both elementary and high, though I gather that the supply of the latter was by no means equal to the demand. In addition to the schools, we visited the Baldwin Locomotive Works, said to be the largest in the world, employing over 15,000 men, and turning out about 36 locomotives per week; the Wannamaker Store; the Girard College, one of the wealthiest and most noted philanthropic institutions in the United States, providing board, education, etc., for 1,500 fatherless boys up to the age of 18, the value of the property belonging to this institution being estimated at over three millions of pounds. Another interesting institution was the Philadelphia

Commercial Museum, open free, established in 1895, to disseminate knowledge of the products and needs of the various parts of the world, and to encourage the foreign trade of the United States. It includes samples of goods and raw materials arranged according to countries and kinds, testing laboratories, bureau of information, and a commercial library. Here is a good field of work for our Chambers of Commerce at home to establish such museums in our large towns. Philadelphia is doing more for the defective class of children than many other towns, seven centres being opened and the work well begun on similar lines to those at home. The enthusiasm and perseverance of Dr. and Miss Keene have forced home the need of this work in Philadelphia, the latter having visited England specially to learn how the work is being carried on. Leaving Philadelphia on Sunday evening, October 25th, we travelled all night in a sleeping car, reaching New Haven early Monday morning. Our call at New Haven was to see the famous Yale University, where nearly 4,000 students are taking advantage of the education provided in the arts, medical, legal, scientific and other schools of the university. A special feature of the university is its attention to the physical well-being of its students. The Director of the Physical Institution is a medical man, Mr. Jay W. Seaver, M.D., who examines every student and prescribes a suitable regular course of exercise to fit the individual requirements. The doctor is assisted by a staff of competent instructors to carry out his directions. We noticed the same system of teaching by discussion among the students in classes carried on in the university which we had observed in the schools, every statement made being critically examined, while the students were called upon by name to discuss any portion of the work. This co-operation between professor and student is very marked at Yale. Some of my colleagues will no doubt give a detailed account of the work of this great university. The President, Dr. Hadley, and his colleagues received us with the greatest possible kindness and after several hours had been spent in the university, we were entertained at lunch by Dr. Hadley at the "County Club," situated about two miles from the university, amidst the most delightful scenery. Late in the afternoon we left New Haven, arriving at Boston about 10 o'clock p.m., pretty well used by this time to the rush of travelling long distances by night or day, though this and the work, added to the very much—over much we thought—heated rooms at the hotels, proved somewhat fatiguing.

By 9 o'clock in the morning of Tuesday, the 27th, we were in the Elliot School, one of the oldest established in the town, consisting of boys from 9 to 14, and we soon found that the schools generally approached more to our English schools than in the places we had previously visited. They are of moderate size, and co-education extends only to 9 years of age. Manual instruction is given in all the schools, the boys beginning at 12 or 13 years of age. There are some 35 schools having a manual training room, so that a few of the schools have to send their boys to these for this subject, but the Director of Manual Training informed me that as soon as possible the work will be taken at each school. Here was the first case where we saw woodwork being taught by women to classes of boys, which certainly struck me personally as being unsuitable employment, and too great a strain on a woman. In addition to woodwork, basket work is also taken.

The girls in Boston are taught sewing for two hours a week (in New York only one hour is given); the ordinary teachers are relieved from teaching this subject, 60 special teachers being engaged in it. Cooking is taught to all the girls from about 12 years of age, in classes of 25 to 30—numbers which the teachers consider too large, and I agree with them. As in other towns, Boston possesses a good system of high schools, well equipped and absolutely free of cost to the pupils; one of these, the Arts and Crafts High School, is a manual school of a very high class, fitted with machinery of a most elaborate character, and Dr. Parmenter has made this school famous throughout the States by the excellent work he is carrying on. At 18 years of age the young men are eagerly sought for by manufacturers and others, and are allowed a shortened apprenticeship. This school is doing much the same work and in much the same way as many of our technical institutions at home, though we must not forget that Boston possesses the largest, best equipped, and most numerously attended technical college in the world, the Massachusetts Institute of Technology, which would require a chapter to itself, of which no doubt some members of the Commission, more qualified than I am, will give an accurate account. Boston has a good system of evening schools, and last year as an experiment extended the system of evening school work in five centres to embrace such subjects as manual training, sewing, millinery, embroidery, domestic science, and singing, and in fact almost any subject which promised sufficient pupils. On Thursday evening the President of the Board of Education, Mr. G. D. Cushing, conducted our whole party to one of these special evening schools, the Bigelow School. There are 3,000 pupils attending this centre, in two parts, 1,500 in each, for two nights per week; the cost of this one centre for one winter's work is over £2,000 and there are five such at work. While at Boston I was honoured by an invitation from Miss McKay, professor of pedagogy at the Wellesley College, some 20 miles from Boston, to address her classes on some professional topic, and on Wednesday afternoon, in company with the Rev. A. W. Jephson and Mr. Black, I visited the college, and for three-quarters of an hour spoke to the students on our English educational system. This Wellesley College is another example, like Vassar, of what America is doing for the higher training of women; it has over 1,000 students in buildings situated in the most lovely neighbourhood, the whole college estate consisting of over 350 acres. The B.A. and M.A. degrees are granted. Almost the whole of the professors, including the principal, Dr. Hazard, are women. The total cost of board and instruction is about £80 a year, though here, as at Vassar, which we visited from New York, many girls comparatively poor manage to get through the college by engaging in all kinds of remunerative work while they are students, apparently without losing social caste by so doing.

Of course, one could not go to Boston without visiting Harvard University, where there are over 4,000 students. The investments of the university are said to be worth £3,000,000. It has one of the best libraries in the world, which has been growing for about 250 years. The fee for tuition is about £30, while board can be obtained in the college hostels at 18s. a week, this arrangement being under the management of the students themselves. The dormitory fees vary from about £9 upwards per

annum, according to the tastes and means of the students. It is possible for a student of moderate means to get through Harvard well on a £100 a year, and some do it on as little as £60 a year. Here, as at Columbia, Yale, and the two Chicago universities, a considerable number of the poorer students obtain the money necessary for their university career by teaching, acting as clerks, waiters, barbers, etc., and as far as one can see they do not lose the respect of their fellow students by so doing. In company with Mr. Shephard (chairman of the Technical Education Committee of the London County Council), I went some forty miles into the country to visit the Massachusetts State Normal College at Bridgewater, which is one of the three first established State Normal schools in America. It was opened in 1840. There are 254 students of both sexes, though the female largely predominates. We reached there at 8-30 in the morning, in time to see the students assemble, and followed the whole of the work until about 1 p.m. Dr. Boydon has been principal for over forty years, and knows, perhaps, as much about the State training system as any man in the States. There are good chemical, physical, and biological laboratories. Each branch of work in the college has its responsible teacher, who has prepared a scheme of work which is printed and placed in the hands of every student. In the rooms where they could be used, each student was provided with an expensive microscope, and apparently used it well. The practising school is contained inside the college building, and is part of the establishment under Dr. Boydon's control, having 450 pupils, ranging right from the kindergarten up to the end of the high school grade, so that the students get observation and training in the methods of work right through. The classes in this school are small, taught by carefully selected teachers, whose methods are supposed to be models for the students' imitation. In observing the teaching given to the students in the college we were struck with the fact that every lesson was given with a view to its being taught again to children—or, in other words, much more attention was paid to the *methods* of the lesson than to the acquirement by the students of information for themselves. Every student in turn is expected to, and does, stand in front of the other students and give a lesson in every subject, the points of the lesson being freely discussed by the other students. It will easily be seen that with this method of teaching the scope of the work taken by the students themselves is not so great as is attempted in our training college at home. No degrees other than the teachers' diplomas are granted at the college, but some of the students, after leaving college, ultimately graduate at State or other universities. Manual instruction in woodwork is given to men and women alike, but no sewing is taught. Young men must be 17 and young women 16 years of age before admission, and the following conditions have to be observed: (1) They must pass a physical examination, (2) present a certificate of good moral character, (3) a certificate from the high school that they have reached a good standard there, (4) a written examination, (5) an oral examination. Tuition is free to residents in the State of Massachusetts, but about £30 a year has to be paid for board and residence, though a large number of students who live near enough on the line of railroad board and live at home. There are three sets of students, some being trained for two years, others for three years, and the remainder for four years. Those who take a full four

years' course are specially recommended for the higher classes in the elementary schools, as assistants in the high schools, and the principalships of small schools, and as expert teachers of special subjects. All the text books and apparatus are provided free. There is also the sum of nearly £1,000 a year devoted from State funds to assist students who cannot otherwise pay their boarding fees. In the State of Massachusetts there are seven of these training colleges, and the total number of such training colleges of the United States is 160, from which about 8,000 teachers graduate annually. In addition to this, every town of any considerable size has its own training college maintained as a part of its school system, and there are also pedagogical schools in connection with most of the universities; all these, as yet, do not send out enough trained teachers to meet the demand, but there is little doubt that the people in the States will ultimately provide training college accommodation enough for all the needs. This is one of the questions which has to be more seriously grappled with at home.

Boston possesses the first public day school for the deaf ever opened, the Horace Mann School, with 127 pupils. Miss Fuller, the principal, has given her life to this work, and with an enthusiastic staff, she is training these unfortunate people as far as possible by the oral method to take their part in the world's work. We saw lessons in algebra, Euclid, and drill. A lad of 16 recited to us, and a class even sang a verse of America, not of course with much tune, but still the words and time were correct. Perhaps the most noted case in connection with this school was that of a girl, Helen Keller, who was both blind and deaf, and was yet taught by Miss Fuller to speak like an ordinary person. Boston is so full of educational activity that it is not possible for me to note all that we saw. Some figures, perhaps, may be given. There are 86,980 children in the whole of the public schools. Of these, 6,555 are in the high schools. There are seven classes, with 87 pupils, for defective children. In the elementary evening schools there are 4,051 pupils, with 192 teachers; and there are three evening high schools and six industrial drawing schools, with 4,862 pupils and 76 teachers. Boston is an acknowledged centre of culture, with its many historical, literary, and scientific societies and clubs, to all of which we were made welcome during our stay. The town is proud of its culture, and deservedly so, and we left it with much regret that a longer time was not at our disposal to examine what there was there to be seen, though it would not be right for me not to acknowledge the great kindness, hospitality, and services rendered to us by a large number of its prominent citizens.

Leaving Boston on Saturday evening, the 31st October, we travelled in a sleeping car to Niagara, which we reached at 7 a.m. the next morning, and spent a quiet Sunday amidst the lovely scenery and the grandeur of the Falls, the day being beautifully fine, and an ideal one for the purpose. It would be foolish of me to attempt to add to the much that has been written about the Falls; suffice it to say that they quite came up to the most beautiful description I have ever read of them. We could well have lingered there a while, but the exigencies of our mission demanded that we should be early on the move, so at 7 a.m. on Monday morning we were in the train again *en route* for Chicago, and after travelling all day we reached this extraordinary city at about six in the evening, where after dinner Dr. Harper, president of the Chicago University,

with a committee of the leading educationists of the town, met us and discussed the plans for our work during the week we were to spend there. Through the Board of Education offices we obtained the information that there is a considerable lack of school accommodation, and several schools are working "double shifts," one set of scholars attending in the morning and another in the afternoon. Evidently the city is growing faster than the provision for scholars. The population is over two millions and growing rapidly. In the common or public schools there are about 273,000 children, with many private schools, of which the Roman Catholics control the largest number, it being said that the pupils in these amount to over 100,000; the 21 members of the Board of Education, as at New York, are nominated by the Mayor. The Superintendent of Education is elected for a period of five years, at the end of which he is re-elected, and great power over the schools is placed in his hands. The percentage of attendance is said to be 93, though there are only 21 attendance officers. The salaries of the teachers rank next to New York, the head teachers of the elementary schools getting £500 per annum and the assistants may rise to £350. There are 15 high schools with about 11,000 pupils, and in construction and equipment they are very good. There are nearly 9,000 children in the kindergarten schools. Chicago possesses two universities, the Chicago University with Dr. Harper at its head, and the North-Western under Dr. James, each with its thousands of students. We visited both, and were entertained at dinner by the students of the former on the 6th November, where we met about a thousand students. All the waiters at the dinner were students, who received their own board free for the work of waiting on their fellow-students, another instance of the means by which those unblest by wealth go through their university career in America. The school buildings in Chicago are not so costly as in New York. As a rule they lack central halls, wide corridors on each floor being used instead. The maximum number of pupils laid down by the Board of Education for each teacher is 48, but in some schools we found this number slightly exceeded. The first elementary school to which we were taken (the Alcott School) had about 1,200 pupils, Miss A. Hardinge being the head-mistress with a staff of 25 assistants. We watched the work through all the classes of this school, where the advanced kindergarten work, the drawing and painting were particularly good. In one large room there was an exhibition of pictures, loaned to the school for a month or two. The teachers talked to the children at times about the pictures, and compositions on them were written afterwards by the scholars. Apart from this exhibition the school possesses many valuable pictures which had been presented by private donors, including parents of the children. The walls of the class-rooms were coloured green, and there were other attempts made to care for the eye-sight of the children. There was a good library supplied with books from the public library. Miss A. Hardinge informed us that the attendance for the last month was over 95 per cent. The older children in all the elementary schools are taught German, and we heard a very interesting and successful lesson being given entirely on the conversational plan. From this school we went to the Lake View High School, with over a thousand on the books, of whom about one-third were boys and two-thirds girls, a proportion between the sexes which seems to hold good generally in the high

schools except in the manual high schools, where the proportion of boys is higher. None of the classes had more than 30 in them. In the laboratories, of which there were three, the class numbered 24. We noticed there were 30 microscopes in the biological laboratory. The Latin class was taking the fourth book of Cæsar, where translations of a much freer character than would be allowed at home seemed to pass muster. An English lesson was being taken in another class by a lady, exceedingly well.

During the week Mr. Jephson and I together visited the Young Men's Christian Association, and from the courteous secretary who accompanied us through the various rooms, we learned that there were 5,000 members, and the association's activities were very many. This association is said to be the largest of the kind in the world. I ought to have mentioned that manual training is well established in the schools of Chicago, and that shower-baths are provided at most of the schools for the children, which we also noticed in New York. Chicago is the home of the child study movement. There is a distinct department for this under the Board of Education, directed by Mr. Fred W. Smedley and several competent assistants. Several schools have been selected and nearly 7,000 children are being tested at various stages in their school career by every known scientific means for sight, hearing, growth, weight, etc., and for their mental development. It remains to be seen whether the deductions will prove of permanent value in educational science, though already it has aroused considerable attention and many pages of the report on education for the United States issued by Commissioner Harris are this year devoted to reporting what Chicago is doing. The sight and hearing of all the children in Chicago have been tested during the last year. Perhaps in our own country this question of individual child study will in the future receive more attention than has been possible in the past. At all events the subject is worthy of more than the sneer it sometimes receives. Some of my fellow Commissioners will report in detail on the famous Armour and Lewis Institutes, where the most expensive and up-to-date technological training is being given to a vast number of students. There is a flourishing school of education at the Chicago University, with Mr. W. B. Jackman as dean. The students here have either obtained or are working for their university degree, and, therefore, are somewhat in the position of our university day training college students. Most of these on leaving college become assistants in the high schools, though not a few prefer teaching in the elementary schools. We also visited the Chicago Normal School, which has 521 students, a large majority of whom are women. Graduation from the high school is accepted for admission, and there seems to be no lack of candidates. Mr. Arnold Tompkins, the present principal, succeeded the late Colonel Francis Wayland Parker, whose educational work is remembered by thousands of educationists throughout the States. Since I described the training college at Bridgewater somewhat fully, there is not much need to say more of this one. During the week we had many opportunities of being brought into contact with business men in Chicago, and there again all seemed earnest and sincere in their expressions of devotion to the education given in the public schools. We went over the well-known store of Mr. Marshall Field, which employs nearly 10,000 persons and is a model of careful organisation. On Saturday, in company with other

members of the Commission, I went over Messrs. Armour's huge establishment, where daily 10,000 pigs, 3,000 cattle, and 3,000 sheep are slaughtered and turned into food for man all over the world. We learnt that 85 per cent. of all the export trade of this firm is with our own country.

The same round of hospitality, greater if anything, marked our stay at Chicago and culminated on Saturday evening in a banquet given to us by a committee of Chicago's prominent citizens, among the hosts being Mr. Armour, Mr. Marshall Field, Mr. McCormick, and other well-known leaders of Chicago. The speaking at this dinner on education and business matters was again a testimony of the American's belief in the value of education in the welfare and progress of the country. While at Chicago we visited the schools at Evanston, outside Chicago's boundaries, and therefore under the control of Cook County authorities. The school buildings are in many respects better than those in Chicago, the Central High School, under Dr. Boltwood, having quite a widespread popularity. We found in Evanston that the Manual Training School and Domestic Science School had been built at the expense of Mr. and Mrs. Gross and handed over to the school authorities. Before leaving Chicago two or three of us, guided by Dr. Nightingale, the superintendent of the schools for the county, and his assistant, Mr. Downey, visited Palospark District School, Cook County, Illinois, about 40 miles from Chicago. Not a house is within sight of this little red wooden building. There were 32 children's names on the books, 24 of whom were present. These children come from one to four miles to school. The mistress, Miss C. McLaughry, gets £130 a year, and has no assistants. She showed us how she managed with this little group, ranging from six to 14 years of age. Of course, the work was not of the highest order, but every child seemed interested and doing his or her best, and it was with much pride that the lady member of the district committee, who accompanied us, told how successful some of the graduates from the school had been when they had gone into the high schools in Chicago. This school was opened the usual ten months in the year, but Dr. Nightingale informed us that there were scores throughout his county, some of them with only eight or ten pupils, which were only kept open the minimum time required by the State law, viz., seven months. Efforts are being made to combine these smaller schools into central larger ones and convey the children to them in wagons. This is actually being carried out in some parts of the States, and is proving more effective and not much more expensive than the smaller schools. Dr. Nightingale showed us many kindnesses during our stay in Chicago, in addition to accompanying us to this village school.

From Chicago many of the Commission broke up into parties to visit various towns. The party I was with consisted of Mr. and Miss Mosely, Professor Rhys, the Rev. T. L. Papillon, Mr. J. R. Heape, the Rev. Professor Finlay, Mr. John Whitburn, and Mr. Cowley, and our way back to New York was taken *via* Indianapolis and Dayton, at each of which places we spent one day, and Pittsburg, where two days were spent, reaching New York on Saturday, November 14th. The population of Indianapolis is about 180,000, of whom 20,000 are coloured and about 10,000 are Germans, the latter fact largely accounting for German being taught in all

the public schools here. There is a superintendent and staff of 42 teachers, five for the high schools and 37 for the elementary schools specially for German. The total number of children on the rolls in the eight grades of the elementary schools is 27,884, and it is said that the percentage of attendance for last year reached 93.9. The truant school had 16 occupants on the day of our visit. Those who are working for smaller classes on our schools at home should note that in Indianapolis the average number of pupils per teacher is 38. All the teachers of the elementary schools are women; the salaries of principals are £300 per annum and of teachers from £100 to £130. On this point the last annual report of the superintendent to the Board states:—

“The demand for teachers who are reasonably good far exceeds the supply. The salaries in the elementary schools, averaging £120 per annum, are not sufficient to tempt men to enter the work. There is a demand for more men teachers in the schools, but men will not be found in the rank and file of teachers until the public is ready to pay a good deal more money for the education of children than it is willing to pay now. Elementary schools for the present, at least, will continue to be taught by women. Many women, however, who formerly as a class became teachers now find open many other avenues of employment not so taxing upon physical strength, which offer as great financial inducements as teaching. I firmly believe that the time will come when the American people will see the necessity of giving the rank and file of public school teachers greater financial remuneration.”

The schools were open 179 days last year.

There are two high schools in Indianapolis, the Shortridge School and the Manual Training High School, together affording accommodation for about 3,000 students; out of the 1,150 students of the former, over 800 are girls, but more than half of those at the Manual School are boys, attracted by the extensive variety and splendid course of manual training they are offered. Each scholar spends $2\frac{1}{2}$ hours per day in manual work, which consists of woodwork, pattern-making, moulding, iron turning, and forge-work, and if a young man stays through the whole four years' course he gets instruction in all these, in addition to a good sound education in ordinary subjects as well. Much of the furniture and a large number of the tools, even including lathes, have been made by the pupils of the school, and would do credit to a first-class firm. For the girls, in addition to the work of the laboratories, there are cookery, needle-work, stenography, typewriting, hygiene, and home nursing, with the same course in mathematics, art, languages, etc., as for the boys. Another feature of the school is the library and reading room, the school work being so arranged that every pupil gets the time of one lesson per day in this room, and we saw 120 students thus engaged at the time of our visit. A librarian was in charge of the 4,000 volumes in the library, comprising the best published works on literature, languages, history, and science, all the latest reviews and magazines, several sets of encyclopædias, dictionaries, and other works of reference, and the best examples of fiction. “A highly organised, well-conducted school” was our opinion, and a good example of hundreds of such in the States, entirely free and open to all as a part of the public school system.

The Shortridge High School has no manual training, and is thus able to devote more time to art, literature, science, and languages. The laboratories—chemical, physical, and biological—are very fine, well fitted, up-to-date. This school claims to be the only one in

the world which publishes a daily paper, *The Echo*, four pages, which is edited, printed, and managed by the students. Its price is two cents (1d.), and 600 of the students are subscribers, as well as many outsiders. The principal and his able staff are justly proud of this school. So great is the pressure of applicants for both the high schools that Indianapolis is already talking of erecting a third. We also visited the Normal School (training college), with 60 women students. In our visits to elementary schools we had an opportunity of seeing the physical exercises, which here again have no approach whatever to military drill, but are simple exercises designed to strengthen the muscles and develop the various parts of the body. The art work and nature study of the schools are of a high order, and among the best we saw. Mr. Kendle, the courteous superintendent of schools, the teachers, and many others did all they could to make our day in Indianapolis a busy and useful one, and we were entertained at lunch at the University Club, where several of the leading men of the city gathered to meet us.

Another night in the train brought us at 7 a.m. to Dayton, Ohio, where on our arrival at 7 a.m. next morning we found the station and the public buildings of the town gaily decorated with the British and American flags, and carriages and pairs waiting to take us to the town house of Mr. Patterson, the head of the National Cash Register Company, whose guests we were for the rest of the day. At breakfast we met Mr. W. F. Chamberlin, the President of the Board of Education, Dr. Edwin N. Brown, the Superintendent of Schools, and others, who accompanied us round the schools. The population of Dayton at the last census was 85,000, though it is said to be now 90,000. There are 30 elementary schools with nearly 12,000 pupils, a high school with 1,200 pupils, and a school for the deaf. The buildings are very fine, and the instruction compares very favourably with that in the larger towns we visited. Kindergarten departments are attached to all the elementary schools; 1,036 pupils are attending them. The percentage of attendance last year was 90.1. The average cost per child for instruction (not for buildings, etc.) is £4 12s. The salaries for teachers are slightly higher than at Indianapolis. After the morning spent in the schools we visited the works of the National Cash Register Company, which were *en fete* to mark the occasion of our visit. The magnificent buildings were decorated with flags and banners, among which the Union Jack, in our honour, was predominant. We were all impressed with the splendid organisation and the excellent arrangements made for the comfort and well-being of the employés. Every person from the youngest to the oldest is invited to make suggestions relating to the business, and if adopted they are liberally paid for them. Mr. Patterson entertained us at dinner at his country house and drove us to the station at 9-30 p.m.

Again another night in the train, and we found ourselves at Pittsburg early next morning, and a long day was spent in visiting the immense Carnegie Steel Works. Nothing on so large a scale can be seen in our own country, and we were all much impressed with the organisation among the men and the use of powerful machinery. No doubt some of my colleagues will report on this visit in detail. Next day was devoted to the Pittsburg schools, under the efficient guidance of Mr. S. Andrews, Superintendent of Schools, and Mr. E. Rynearson, M.A., the director of the High Schools, and several

others. Pittsburg school government is curious. In addition to the General Board of Education there is a special sub-board of six members in each of the 38 wards, which builds the schools of the ward, elects or discharges teachers, and controls the schools generally. The Central Board, however, fixes the salaries and also has full control over the high school. This position has led to great differences in the schools in various parts of the town, though generally the rivalry is shown by seeing which ward can produce the finest buildings, some of which are very palatial. The high school is in three departments—academical, commercial, and normal. Admission to each of these is by examination, the same for all three, based on the work of the elementary schools, though the classes of study after are different. The academical, in addition to the ordinary subjects, takes Greek, Latin, and German; the normal prepares young women for teaching, with an appropriate course of study; and the commercial, which takes the academic course for the first year, and then book-keeping, typewriting, phonography, commercial arithmetic, commercial law, commercial geography, civil government, English grammar, and composition. The great feature of this last department is the "business house"; portions of the building being fitted up as an American jobbing company, U.S. commission company, students' national bank, union transportation company, post office, and real estates offices. All the pupils in their last year actually do business with all these departments; buy, sell, make losses, become rich, or bankrupt, keep a banking account, draw cheques, etc. The head of this school (Mr. S. D. Evehart) is a remarkable man, carrying on a remarkable work. There are other schools of this type in the States, but this is the only one I had an opportunity of seeing, and, as far as I know, there is nothing like it at home.

In the whole of the high school departments there are about 2,000 pupils, but, as Pittsburg has 350,000 inhabitants, it ought to have more high schools to compare with many other towns. Manual training is taught in the elementary schools but not in the high schools. We visited a school or two at Allegheny—across the river of the same name—a township separate from Pittsburg, the third ward elementary school just erected being one of the finest we have ever seen, with a central hall capable of seating 2,000, and a large room fitted up in every way like a first-class dining room in a private house, where the girls were taught to lay the table, etc. This school had every modern appliance, automatic clocks, telephones, etc. I am sorry that space forbids me to mention by name those who so kindly received us at the Allegheny schools. We closed a long, busy day by a visit to the famous Carnegie Library, where the librarian courteously showed us over the splendid monument of Mr. Carnegie's generosity. Fine as the building is, with its 200,000 volumes, its picture gallery, museum, etc., Mr. Carnegie has just given another million dollars to extend it! There are several branches of the library scattered over the town. The most interesting portion of the work of this library to me was the "Children's Library," which has separate rooms, with a librarian (Miss Olcott) and a staff to assist her, in providing the mental fare for the little ones. She was pleased to inform us of the success of the "Children's Story Hour," when once or twice a week the children gathered and stories were told them by experts in story-telling; of the devices for getting the books

into the poorest homes, and the success attending the efforts of the teachers, with the school libraries supplied from the Central Library. The latest development of the children's branch is the establishment of a training school for librarians for children's libraries in other towns, and the demand for these is greater than the school can supply. Two such librarians have been recently sent to Brooklyn, which wanted five, but no more could be supplied, and the day before our visit one had started to organise a children's department at a town in Texas. Mr. Carnegie has just given £1,000 a year for three years to extend this portion of the work.

At 9-30 on Thursday evening we left Pittsburg to travel again by night to New York, where we arrived next day, several hours late, owing to the breakdown of the engine. On Saturday, the 14th, most of our party left for England, but I stayed till the 25th of November to complete my inquiries. During this time I had interviews with a large number of teachers and others in New York, who afforded me considerable information which I should otherwise have missed. Among those to whom I was particularly indebted, in addition to the teachers, are: Dr. Rice (editor of "The Forum"), who has devoted many years of his life to educational inquiry among the schools, Mr. Ossian Lang (the editor of "Educational Foundations," and other works), and Dr. Buckley (editor of "The Christian Advocate").

The male teachers of New York kindly entertained me at dinner on November 21st, at which about 120 were present, and perhaps this is the fitting place to offer the most cordial thanks to the teachers and all others who did so much to make our visit to the States a profitable and enjoyable one.

While there is nothing that we saw in the school system of America to cause us to feel panic-stricken about our own system at home, there is enough to rouse the public generally to a higher and better appreciation of the value of education, and the authorities to a thorough interest in the work which has fallen upon them to carry out. I feel sure that my fellow Commissioners will all agree that the public attitude towards education in the United States is much better than at home. There is a belief in education deeply rooted in the minds and hearts of all classes of the American people, not so much for the good it may bring to the individual, but because it is felt that the national prosperity and the national safety depend very largely upon an educated people. Out of this belief has grown up that system of education, free and open to all, from infancy to manhood and womanhood, from the kindergarten to the university, which we investigated during the course of our all too short visit. One can see the evidence of this attitude in the newspapers, many of which, like the "Brooklyn Eagle" devote a page weekly to educational topics; in the earnestness with which school authorities vie with one another in the excellence of their educational machinery; in the willingness of business men to co-operate with the authorities in assisting their employes to advance their education; in the large gifts from wealthy individuals for educational purposes; in the multiplication of institutions for the advancement of higher education, especially of technical and technological education; in the rapid growth of universities and their ready adaptation to the needs of the increasing thousands knocking at their doors; in the sacrifices many in humble circumstances make to obtain

an extended education. America is undoubtedly far in advance of this country in that its education is graded and co-ordinated from the kindergarten to the university, and that it is entirely free. It has not been the purpose of the Commission to point out the *faults or weaknesses* in American education, though no doubt each one of us has noticed points on which America has much to learn from England, as their educators frankly acknowledge. I may, however, venture to hint that perhaps experimentation may sometimes be carried *too far*; that what is "large" and "showy" is not necessarily the best; that quantity is not always quality, or novelty necessarily improvement. It has been our object, however, to note the good points; to see where we fall short, and to recommend to the public at home how our education can be improved, how deficiencies can be supplied, how errors can be corrected, in order that the education of our people may be raised to as high a level as possible.

WHAT WE MAY LEARN FROM AMERICA.

1. In America the public elementary school is considered the basis of all its system of education, and the aim is to make it as good as possible. We may learn from that country to make our buildings as perfect as possible; to equip them with the best modern apparatus; to provide every time-saving device for the teacher; to reduce the size of the classes to a reasonable number of pupils; to teach manual work to the boys, and cookery to the girls at a suitable age; to eliminate the unqualified teacher; to encourage the parents and the public to take more interest in the schools; to remove what remains of the so-called examination of scholars; to correlate the instruction with that of the school in the grade above it; not to be cheese-paring in the supply of good books and materials, and to allow the children the full use of them.

2. Thoroughly to organise the schools next above the elementary schools. This may be done:—

(a) By providing a larger number of schools of the same type as the excellent higher grade schools established by the late school boards, at as low a fee as possible, or, better still, free.

(b) By taking any existing schools doing any kind of good secondary work, and fitting them into their proper place in the system, improving them, financing them, and getting in return as much control over them as is possible.

3. To make the passage from the elementary schools to those mentioned in 2, *a* and *b*, as easy as possible by a correlated curriculum, free places and maintenance scholarships.

4. To encourage and improve the system of evening schools.

5. To provide technical colleges, or aid those already existing in every town of sufficient size.

6. To unite teachers of all kinds into one great profession.

7. To provide training institutions for teachers in co-operation with existing institutions, and the universities.

8. To provide better facilities for the higher education of young women.

9. To extend the usefulness of existing universities and university colleges.

10. To take every step for the establishment of other universities.
11. To encourage educational inquiry and experiment.
12. To induce other authorities to co-operate more and more with the school authorities.

To do the work indicated under these points will require energy, ability, tact, and that dogged perseverance which, however, has never been found lacking in the English people when sufficiently roused to make the effort.

In conclusion, I should like to thank Mr. Mosely for undertaking this Commission and for giving me the opportunity of serving upon it, and to express the hope that his labours will not be without fruit in helping to advance the education of our country.

HARRY COWARD.

Mosely Educational Commission.

Report of the Rev. T. A. FINLAY.

The purpose of our Commission in visiting the United States was to study the educational methods of that country in their bearing on its commercial and industrial life, and, if possible, to draw from our observations suggestions for the improvement of our methods at home. It was understood from the outset that in America, as elsewhere, school systems, to be efficient, must be adapted in their details to the particular needs of the community for which they provide, and that in this respect they can furnish but little guidance to educational reformers elsewhere. But it was also understood that certain general conditions essential to industrial success are the same in all countries. How these conditions might be effectively promoted by school systems, one might, it was expected, learn in America. America had risen to a first place in the field of industry with unexampled rapidity; her own people, and foreign visitors—notably the Mosely Commission of 1902—attributed that success in large part to her educational methods; in America, if anywhere, we might learn how the education of a people might be directed with assured effect to the promoting and developing of the national industries. I proceed to state briefly how far in my judgment these expectations have been realised.

In America there is a universal belief in the value of education, and a universal zeal in promoting it. The expenditure of money on education is generous to the verge of extravagance. States and municipalities vote funds for the purpose without stint—sometimes as much as one-third of their revenue. Religious bodies contribute to their own schools on the same scale, and private individuals bestow princely fortunes in the endowment of educational institutions. The buildings of the elementary schools are prominent in all quarters of the great cities. The site of one of these schools will sometimes cost as much as £50,000, and the building itself as much more. The salaries of the teachers of these elementary schools—each of whom will have classes of from 40 to 50 pupils—range from £100 to £500 a year. The high schools are equipped and staffed in a proportionately costly manner, and the universities seem but to have to ask for money to get it. Where these institutions are supported by the rates the ratepayers seem to be satisfied they are receiving value for their money, though I have heard complaints of the expenditure on the salaries of the higher officials of some municipal education departments.

For the purposes of our inquiry the schools of America may be divided into two classes—those which provide a general education, and those which are devoted to strictly technical training. In the

first class are included the elementary schools, the high schools, and the universities ; in the second the trades schools and technical institutes.

Of the first class it may be said that they are equipped for teaching purposes with every appliance that money can supply. And of all of them, with a few exceptions, it may be said that their aim is the same—to form smart, quick-witted, alert business men and women rather than scholars or thinkers.

The curricula of the elementary schools include a wide range of subjects, manual training being prominent in many of them. In the teaching of every subject the end pursued appears to be a prompt and ready use of the knowledge given rather than laborious thought and personal mental effort on the part of the pupils. The work of the school is in fact done by the teacher rather than by the pupils. In the public elementary schools the system of co-education of the sexes is well-nigh universal. The majority of teachers—two-thirds of the entire number—are women ; men with the acquirements necessary for the functions of the teacher, as understood in America, have so many other careers open to them that they do not enter the profession in large numbers. The salaries of the women teachers range, as has been said, from £100 to £500 a year. This remuneration is by no means excessive. The work imposed on the teachers taxes their energies to the full. I found the complaint of excessive strain common among them. The school hours are from 9 a.m. to 3 p.m., but the work of preparation absorbs the remainder of the day. In the large cities, wherever the teacher has to retire when she marries, the average length of service in the schools is ten years.

For their laborious task the teachers are admirably trained. The efficiency of American schools is due primarily to the professional skill of the teachers. Programmes of study, no matter how well drawn, will never raise education to a high standard unless the teacher is trained for his duties ; even an indifferent programme will become effective in the hands of a teacher who is an expert in the arts of his profession. This the American educational authorities realise thoroughly. Generally speaking, they require that before receiving a permanent appointment the candidates for the teacher's office shall have passed through an elementary and high school course, shall have received two years of training in a normal school or training college, and shall have served three years of probation in a working school, their final appointment being dependent on the favourable report of the principal of the school in which they have served. These are the requirements in the public schools. The teachers of the parochial schools—most of them members of religious associations—are for the most part excellently trained. Wherever they are not they fail in the competition with the public schools.

The task of the American elementary schools differs in two important respects from that fulfilled by our schools at home. In the first place, they have to form to American citizenship and to train to English forms of speech the children of the immense bodies of foreign immigrants who are pouring into the country. This they do with remarkable success. The skill with which children, who in the home circle use only Italian or Yiddish, are brought to employ English as their familiar tongue, and with which they are imbued with sentiments of American patriotism, is beyond all praise.

In the second place they do not aim at educating the unskilled labourer for his work in life—the unskilled labourer of America is supplied from abroad, from Italy, Hungary, the Slav countries, and Scandinavia, and at present, in diminishing proportion, from Ireland. No boy in an American school looks forward to digging and delving for hire as a means of livelihood, nor does any girl contemplate domestic service as her future work in life. Speaking to a contractor who had thousands of men employed on the earthworks of an important contract, I asked him how many of his labourers had been educated at an American school. He answered promptly: “Probably not one.” On leaving school the American boy enters an office, a store, or a factory, or becomes apprenticed in a skilled trade; the American girl becomes a book-keeper, a clerk, a stenographer, or factory worker. She also finds her way into the skilled trades. In New York there are 250 girl members of the printers’ trade union. I saw some of them at work as linotypists. They were earning up to 23 dollars a week, and I was assured by the foreman that they were amongst the best workers in the printing office. I also found girls in charge of the complicated and delicate machines of tool factories. They were paid 25 dollars a week. In America, machinery has been so perfected that dexterity rather than muscular force is required for its use. Where dexterity is the one requirement the girl may be quite as competent a machinist as the man. And this being so, there is no reason why she should not find ready employment, and be admitted into the union of approved workers. It was noticeable in the case of all these girl artisans that they brought with them to their duties those habits of cleanliness, neatness and order in their persons and their work, which it is a chief aim of the American school to inculcate and to form.

The absence of religious teaching in the public schools has led to the establishment of parochial schools by the churches concerned for religious influences in education—notably by the Catholic Church. The parochial schools are built and equipped by voluntary contributions, on a scale which at times approaches that of the public schools. They follow the main lines of the public school curricula. The competitive examinations for entrance into the normal colleges furnish the only means of comparing their work with that of the public schools. I have it from the head of one of the leading normal colleges of America that in these competitions the children of the parochial schools more than hold their own. The building and maintenance of these parochial schools impose a heavy burden on their supporters, who, besides bearing the whole expense of educating their own children, have to bear part of the expense of educating the children of their well-to-do neighbours. The parochial schools of the city of Chicago educate about 100,000 children, those of New York some 75,000. In Philadelphia and other great cities the numbers are similarly large.

The high schools carry the education of children who can afford to continue at school through courses of classics, mathematics, science, and modern literature, to the college entrance examination. The normal length of the high school courses is four years. No general standard of training is insisted on for the teachers of these schools, though the tendency is to require from them a college degree. The education given is of the same kind as that imparted in our own schools, with the difference already alluded to of putting more of the work upon the teachers than is usual with us.

Here again, the American educational authorities look for educational results to the trained capacity of the teacher rather than to the efforts of the pupil. It is to be noted that the high schools are more largely attended by girls than by boys. This may be due to the larger number of girls who are preparing for the teaching profession. Side by side with the public high schools a number of institutions of the same character, known as "academies," are maintained by private individuals and by religious associations.

The American "college" is an institution which carries on, through courses of four years' duration, the work of the undergraduate courses of our universities. Most of them hold a charter from the State in which they are established empowering them to confer the Bachelor's degree. They differ widely in efficiency, and the value of the degree depends on the established character of the institution which confers it.

The colleges for women are established on a scale peculiar to America. The residential colleges of Vassar, Wellesley, Bryn Mawr, and Smith have no parallels in European institutions. They have been created by private benefactions, they educate women undergraduates only, they are, as a rule, governed by women, their laboratories and observatories controlled by women, and their chairs of classics, literature, and science occupied by women. Vassar and Wellesley have close on 900 students each, Smith has 1,100. The work done in these institutions seems to be excellent of its kind, and accounts largely for the prevalence of the educated woman in American society, and for the efficiency of women teachers in the higher grades of the teaching profession.

It is difficult to define the American "university," as distinct from the "college." The ideal university, according to the American conception, would seem to be an institution in which higher studies, literary and scientific, are carried on by students who have already received a college degree. Johns Hopkins University, Baltimore, is, however, the only American institution which approaches this ideal. All the others have undergraduate courses, and are, therefore, colleges as well as universities. Even Johns Hopkins has an undergraduate course, but this is kept wholly distinct from the courses of the university proper. The undergraduate courses of the American universities do not differ materially from those of the mere colleges. They differ from our own in this that the undergraduate has in many universities a wide range of the most varied subjects from which to select the matter of his studies for any given year of his course. This system of "electives" has its attractions for the student who wants a degree on easy terms, but it is condemned by many thoughtful American educationists as incompatible with that systematic progress along definite lines which genuine university education would seem to imply.

In the sphere of specialised studies the universities keep themselves in touch with the industries of the country. In addition to the usual faculties of arts, medicine, and law, they maintain schools of the practical arts, such as pedagogy, pharmacy, engineering, architecture, the mechanical arts, agriculture, and forestry. Besides furnishing trained teachers in these branches, they prosecute research work, and thus put the best thought of the country at the service of its industries. In this respect they resemble the universities of Germany, and furnish a model which our newer university institutions might copy with advantage.

The technical schools of America exhibit few features which distinguish them from our own schools of the same class. The schools of general technology, such as the Drexel Institute of Philadelphia, the Massachusetts Institute of Technology in Boston, the Armour Institute of Technology in Chicago, and similar institutions elsewhere, differ in no important essential from the corresponding institutions of London, Birmingham, Liverpool, and other British cities. Their history, however, suggests a difference between the conception of public beneficence entertained by the wealthy citizens of America and that held by men of large fortunes in Great Britain.

The trade schools are of all kinds. For almost every trade there is a school in some one or other of the great industrial centres. The evening classes in these schools are sometimes largely attended by working men and women who desire to become skilled workers. But the opposition of the trade unions to these schools is general, and they have in consequence only a limited success. A way of reconciling trade education with the desire of the unions to restrict the number of competitors in the several trades has not yet been discovered in America. By far the most efficient of the trade schools are those which have been established by certain great firms in connection with their factories, and in which their apprentices receive a knowledge of the scientific principles which they are daily applying in the workshops.

To conclude. If I were asked whether the industrial greatness of America is to be attributed primarily to her educational methods I would answer in the negative. America's industry is what it is primarily because of the boundless energy, the restless enterprise, and the capacity for strenuous work with which her people are endowed; and because these powers are stimulated to action by the marvellous opportunities for wealth-production which the country offers. These conditions have determined the character of all American institutions—the schools included. The schools have not made the people what they are, but the people, being what they are, have made the schools.

But do not the schools help to maintain and develop the qualities on which the greatness of the nation rests? Do not the industrialists of the country owe their formation of mind and character to them? To these questions I would not reply by a mere yes, or no. In the army of industry there are different grades, and each grade has its own requirements. The rank and file must be men of alert brain and deft hands, and must possess an accurate knowledge of nature and her laws. These qualities can be brought out by school training—they are well developed by the schools of America—by the elementary school most of all; and, in the elementary school, by the admirable work of the highly-trained teacher. But in the captain of industry, the man who directs the efforts of the unskilled labourer, skilled artisan, engineer, and chemist to the working out of great industrial schemes, another order of qualities is necessary. A comprehensive grasp of economic issues, the power to marshal and control the human forces of industry, the faculty of industrial strategy in face of hosts of competitors—these characteristics the successful organiser and leader of industry must possess; and these characteristics are not the product of the schoolmaster's art. To

these qualities in the leaders of her industrial army America chiefly owes her prosperity. The men in whom these qualities are conspicuous are not all of them graduates of her universities, or even of her elementary schools. In every great city, among the most successful employers of labour are to be found immigrants from England, Ireland, and Scotland, many of whom received their early education in an indifferent country school. These men have learned the arts of industrial success in the school which their social surroundings in America provided. In the same school also the native-born leader of industry in America receives his best education.

T. A. FINLAY.

Mosely Educational Commission.

Report by Professor T. GREGORY FOSTER.

In issuing invitations to join his Educational Commission Mr. Mosely stated that his object in organising it was to investigate "the relations between education and commercial and industrial efficiency." From the nature of the arrangements, and still more from the *personnel* of the Commission, it was clear that he intended to give the widest possible interpretation to the words "commercial and industrial efficiency." Besides those whose work connected them more directly with commercial and industrial developments, the Commission included representatives of the humanities on the one side, and of professions not directly connected with commerce and industry, such as medicine, on the other. Thus it was made clear that the scope of the inquiry was not to be a narrow one. It was fortunate, indeed, that the Commission was thus left free and was not restricted in a narrow sense "to find out the educational causes and conditions which have contributed to the rapid industrial development of the United States." It would not have taken long to obtain the answer to that reference.

Generally speaking, it may be said that the commercial and industrial efficiency on the one hand and the educational zeal and energy on the other are parallel movements, that neither is the cause of the other, but rather that both are the outcome of the same general awakening and the realisation of the possibilities of the country. They are inter-dependent; if one is more dependent on the other than the other on the one, it is the educational zeal and enterprise that is dependent on commercial and industrial efficiency rather than *vice versa*. That the commercial and industrial efficiency of the country has led to the widespread belief in education to be found in varying degrees in every State of the Union there can be no doubt. Without that widespread belief the remarkable zeal and enterprise which characterises the educational institutions of the States would be impossible; for, except in the older Eastern States, the educational organisation of the country is dependent upon the willingness of the people to spend their own money upon it. The truth of this contention is all the more certain when we remember that the present free school system of the United States did not in any sense become prevalent until late in the seventh decade of the last century, that none of the institutions which are regarded to-day as of first-rate national importance dates in its present form further back than 1880, and that most of them are much more recent. For instance, even the comparatively old universities of Harvard and Yale are as different from the colleges bearing the same names of twenty and thirty years ago as they would have been if they had been entirely new institutions.

It is equally true that the great universities of the Middle West States, whether in their external material appearance or in their curricula and spiritual aspects, would hardly be recognised by those who were associated with them between twenty and thirty years ago. The same thing is true, though not to so great a degree, of the great technical institutions, such as the Boston Institute of

Technology. It is to be remembered in this connection that the University of Chicago, which has already taken a prominent place among American institutions and numbers its students by thousands, is only just eleven years old.

When we turn from the universities and institutions of higher education to the high schools, the truth of this view becomes even more evident. The public high school built and maintained with public money, controlled and organised by the public education authority of the State or City, is, in a sense, but the growth of yesterday. In New York City, for example, it was only six years ago that the Board of Education were empowered to spend public money on high schools. The progress that has been made in that short time is evidence of the splendid conviction and zeal with which the work has been undertaken, and also evidence that the people, as a whole, believe that the education being provided in these institutions is a thing to be desired, and, therefore, worth paying for.

Educational legislation is a matter for each State and is not determined by the national Senate and Congress at Washington. Upon the local community lies the responsibility of educating its own people. The result of this is that educational institutions, whether elementary or higher, must be in close touch with the aims and ambitions of the community that they serve, or they cannot be allowed to continue to exist. That this condition is in the long run beneficial in an equal degree to the teachers, to the people, and consequently to the institutions, I have no manner of doubt. While it often hampers and hinders the progress of the more advanced spirits, it obliges them to obtain the confidence of the people and forces them to make the foundations of their work more sure than they probably would have been without this influence. The result is that the teachers are in touch with the world of affairs to a degree that is quite unknown in Great Britain. They have their eyes continually turned to the present and they use their knowledge of the past as a means of interpreting and illustrating the present. That this interpretation is sometimes of a superficial and misleading kind is probable, but of its beneficent effect on the life and methods of the teachers there can be no doubt. Perhaps the most noteworthy examples of it are to be found in the colleges and universities where specialism is prone to drive men into narrow grooves of life and thought. Take him all round, the university professor and teacher of America is (to use a current American expression) a more "live being" than the university professor and teacher of the leading countries of Europe, and as a consequence his influence upon the lives of his students, and consequently upon the life of the community, is more direct. His attitude towards his students is that of a co-worker, not that of a dictator. He is free to be a co-worker because he is free to determine the nature and method of his courses, and he is equally free to decide the times and modes of testing and examining his students.

This close relationship between teachers and people which is made necessary by the social and political conditions in the States is a civilising and educative force of extraordinary power. The teacher is bound to obtain the confidence of the people, and the people in their turn obtain a direct and living interest in things with which under other conditions they would not concern themselves.

The truth of this is forcibly brought home in such States as Iowa and Wisconsin. These are mainly, indeed almost exclusively, agricultural States, yet each of them maintains an educational organisation comprising institutions of all kinds, ranging from elementary common schools through the various grades of school to technical and agricultural institutes, up to the State University.

The Legislatures of these States, consisting for the most part of agricultural representatives, were at first slow to recognise the value of the higher branches of education, and were accordingly unwilling to devote public money to them. Little by little the institutions for higher learning have won their way, and have convinced the farmers of the value of their work ; in the first instance, generally by means of the direct appeal of producing results of obvious utility to the farmer, such as milk testing, methods of preventing and curing disease among cattle, methods of fruit growing, of stimulating, and controlling production. By these direct results the farmers have been led up to a thorough belief in the work of the higher institutions with the consequence that at the present time the applications to the Legislature for an increase in the university appropriations are listened to with interest, and only need to be well founded to meet with adequate response.

What is even more striking is the extent to which the belief in the value of higher education is spreading among people who had no opportunity of obtaining it for themselves. So much is this the case that they are prepared to make great sacrifices to give their sons and daughters the advantage of the opportunities that did not fall to their share. Universities and colleges are as a result the resort of rich and poor alike. The poor student who works his way through the university is esteemed and respected by his fellows, and the more so because, as I was informed, he is frequently to be found amongst the first in the graduating class of his year.

Whilst, therefore, it may be taken for granted as a starting point, that the present educational methods and organisations of the States cannot be regarded as the cause of the industrial and commercial efficiency that so strikingly characterises them, it must be admitted that the young men and women who go out into the world from the various institutions in the States year by year are well prepared to meet the demands of modern conditions of production and distribution, because their training has been in touch with the realities of life, and because it has been a training, not a process of informing and filling the mind with information.

There is opportunity in abundance for the trained worker in America ; there is little or no opportunity for the untrained, unskilled worker. The leading men of business in all the great cities that I visited, whether manufacturers or distributors, were agreed as to the value of the higher kinds of education for their employes ; in fact, they all stated that it was difficult to find enough well-trained young men to fill the posts that became vacant and the posts that they are continually obliged to create. One of the professors of mechanical engineering at the Boston Institute of Technology told me that without any effort on his part he had placed all the members of the graduating class of 1903, and could have placed many more, while at the University of Michigan I learnt that one firm had taken the whole graduating class and would have taken twice as many had they been available. The same thing is found in the educational

world, but there, unfortunately, the attractions for really well-trained men are not as great as in the commercial world. The salaries now offered in the States to all ranks of teachers from the universities down to the elementary schools are inadequate, and unless something be done to remedy this, the power of education over the nation must decline. In both secondary and elementary schools "teacher" has almost become feminine, and in the newer universities large numbers of women are to be found among the teachers. While it is undoubtedly a good thing to have women teachers in the ranks of the profession, and while, as one parent put it, "it is better to have one's children taught by first-rate women than by fourth or fifth-rate men," it cannot be desirable, at least in the higher branches of education, that the number of women should predominate over the number of men. It cannot, for instance, contribute to the virility of a nation for a large number of its boys to be taught and guided almost entirely up to the age of 18 by women, as is the case in some of the States. Whether this tendency is to continue in the States is to be determined by the amount of money that the nation is willing to spend. Whether the similar tendency which has already begun in Great Britain is to develop will be determined in exactly the same way.

These general views, together with the more detailed statements below, are based upon my actual experiences in New York, Princeton, Washington, Baltimore, Philadelphia, New Haven, Boston, Albany, Ann Arbor, Chicago, Lake Forest, Iowa, Minneapolis, St. Paul, Madison, Williamstown, Worcester, and New Jersey, which were visited in the order set out. My aim throughout will be to explain those points in American education, both in method and organisation, which seem to me of special importance in the present stage of English education; in other words, to criticise the English position rather by bringing out the strong points of the American than to criticise the American by pointing out its weaknesses.

The objects I chiefly had in view were:—

(a) To investigate the organisation and methods of the higher development of general education, more especially in regard to English, history, modern languages and literatures.

(b) To inquire into the methods of the training of teachers.

(c) To learn something of the methods of organisation and administration, both in a general way and with regard to the relationship of the professional schools in the universities to the faculties and departments of pure science.

A.—The Universities, Colleges, and High Schools.

Universities.—To avoid misunderstanding, the terms universities, colleges, and high schools require explanation. In giving these explanations it must, however, be borne in mind that the history and conditions of the different States vary very widely, and, while there is active progress towards unification without uniformity in the educational institutions of America, the process has only just begun, and the full results have still to be realised.

In general terms the conception of a university in America is that it should provide what is known as the general college course of four years for students between the ages of 18 and 22, by which time they should be ripe to take the bachelor's degree. It also provides graduate courses, which require advanced and research work, and

which may lead to master's and doctor's degrees. Not less necessary than these to the complete university is the provision of one or more professional schools, such as medicine, law, theology, engineering, and teaching.

That is the ideal that guides the policy of the majority of the institutions that bear the name and rank of university. It is the ideal of the older Harvard and Yale, which not many years ago provided only a four years' course. It is also the ideal of the newer State universities like Michigan, Iowa, Minnesota, and Wisconsin, and it is equally the ideal of the privately-founded and endowed universities of Cornell and Chicago.

It should be noted in this connection that the Johns Hopkins and the Clark Universities were founded to a large extent on the model of the German universities, and were intended to do only graduate work. The Johns Hopkins Medical School which is the only professional school attached to that university admits only those who have gone through a general college undergraduate course of study, including subjects like chemistry, physics, and biology. Clark University has no professional schools in the ordinary sense of the word, but like Johns Hopkins is a training school in the methods of higher work and research, and is mainly resorted to by those who aim at college or university teaching as their life's work. It is, however, important to note that both these universities have instituted since their foundation collegiate departments for the purpose of doing undergraduate work. I ascertained that some of the professors at the Johns Hopkins regard this as a mistake, and contend that for the same man to attempt to carry on undergraduate and graduate teaching is like attempting to live in two hemispheres. On the other hand, it seems that the present distinguished president of Johns Hopkins, Professor Ira D. Remsen, and many of his colleagues, maintain that the existence of the two sides in the one organisation is a strength to each. The undergraduate side makes it possible to keep a larger staff than it would be if the graduate side existed alone. In this way young men are being continually brought into the service of the university, are given opportunities for higher work and research, and live in an atmosphere that tends towards such work. Further, it is admitted that while it may be desirable for some of the staff to be devoted entirely to graduate and research work, they find that the presence of the younger men and the contact that those engaged on research obtain through them with the promising undergraduate both increases their own zeal as investigators and adds to the number of graduate and research men who enter their departments. It is interesting also to note that the final decision to institute a collegiate department at Johns Hopkins was brought about by the pressure of public opinion. This again illustrates the point already referred to (the close contact between the people and the universities), and it is interesting to note that the decision thus pressed upon the university by public opinion seems to be justified by experience, for during the short time that the collegiate department has existed evidence is to be found showing that it has strengthened the work that the university set itself specially to do.

Clark University was from the outset different in character from Johns Hopkins. Its scope was more limited, there being only six departments, namely, chemistry, mathematics, physics,

biology, psychology, anthropology. The work done in these departments in the 14 years since its foundation is indeed remarkable, and is a lasting monument of the energy and power of organising as well as of doing research work on the part of its distinguished president, Professor Stanley Hall. The tenth anniversary of the foundation of the university was celebrated by the publication of a handsome volume containing an historical sketch, a full report of each of the departments, together with the history of the development of the library, the text of the scientific lectures delivered in connection with the celebration, and a list of the papers published by past and present members of the staff, fellows, and scholars. This list fills 106 closely printed double-column quarto pages, and contains, I am told, some epoch-making work in physiology and psychology more particularly.

The story of both Johns Hopkins and Clark Universities is significant of what men in the United States are prepared to do in the highest service of learning and research. In each case the tenure of posts at these universities has involved considerable personal sacrifices, but there have always been men found ready to take them. There is in both cases, and especially in the case of Clark University, an almost pathetic interest in the struggles that had to be made for the ideal set forth. On the death of the founder of the Clark University (Mr. Jonas G. Clark), the University became possessed of a larger revenue. It also was obliged to develop a collegiate department. Mr. Clark left a sum of money for the foundation of such a department in connection with his university with the express stipulation that the course should be of three years' duration. By this means the length of the college course, which is one aspect of the question at issue between the colleges and the high schools on the one hand, and the universities on the other hand, takes a new and practical form. This point is referred to again in the next section.

It must be remembered that in a country so new as America there are many institutions calling themselves universities that only bring discredit to the name, but the various States are dealing with these rapidly and firmly, and there is no doubt that the abuses that have been made much of in this country will soon disappear.

Colleges.—The colleges are distinctively American institutions, although modelled to a certain extent after the colleges of Oxford and Cambridge. They are the oldest institutions of higher learning in America, and they were founded in almost every case for the purpose of training men to serve God in Church and State. Like the Universities of Oxford and Cambridge, theology, the classical humanities and mathematics were, until a few years ago, the chief subjects of their curricula. The curricula have lately been extended so as to include most of the branches of pure science and in a few cases some of the branches of applied science. The main work of the colleges still is to provide the four years' general course for the bachelor's degree which immediately follows the high school course. Some of them have developed and others are developing graduate courses which lead to the master's degree.

There is considerable uncertainty about the future of the colleges, more especially of the smaller ones. On the one hand, it is felt that as the high school course is developed the need for

the college course of four years will gradually disappear. On the other hand, it is felt that the great universities will provide in their collegiate departments the parts of the general course that the high school of the future will not be able to provide, so that between the high schools and universities the *raison d'être* of the colleges will cease to be. The supporters of the colleges are very many and strong, among them being many of the leading men of America of to-day who were educated at these colleges. They contend that the character-moulding and character-building that have been amongst the leading features of the colleges, and especially of the smaller ones, can never be effected either by the high schools or by the large universities. An especially interesting point in regard to this is that the issue is being fully and freely faced on both sides, and the subject is being discussed by various educational agencies with a calmness that augurs well for the solution of the difficulty.

Princeton University, which is sometimes called an overgrown college, is an interesting example of the influence that the large universities have had upon an institution that still clings to a large extent to the old college traditions and ideals. The work and aims of Princeton are still mainly centred in the college course, but humanities are strong there, and the careful organisation of the graduate school under Dean West promises to lead to the production of much valuable research work in the ancient and modern languages and literatures. But Princeton is at the crossways with regard to the professional schools. She will have to make up her mind one way or the other within a short period.

High Schools.—It has already been said that the public high school is a comparatively recent development in America. As in this country so also in the States, secondary education was until relatively recent times provided by private enterprise. In the New England States it was provided by institutions known as academies, where fees were high and education seems to have been as various in its quality as it is in this country. During the last twenty or thirty years the public high school has been gradually developed. It was in the first instance a mere expansion of the elementary grammar school, and was instituted undoubtedly with the view of continuing to a higher stage the education of those children whose parents were able to leave them at school after the age of 14. In the course of time the public high school has tended to supplant the older academy, and has become, except in the older States of the East, the regular place of education for the children of both sexes.

Its curriculum occupies four years, and is so arranged as to fit on to the curriculum of the elementary and grammar grades. This is one of the weakest points in the educational ladder that has been constructed in the States. The new public educational authorities of England in organising secondary education will do well to consider carefully how the transition from the elementary to the secondary is to be made. In America where, taking the country as a whole, the children of the rich and poor go to the same elementary school, where the son of the President may be seen side by side with the son of the President's coachman or greengrocer, it is deemed invidious, say, at the age of twelve, to differentiate the education of the boy who will go on to the high school from that of the child whose education will be limited to that of the elementary and grammar school. Moreover, I was told that it was not only

invidious, but it was impossible to do this with any satisfaction, as in many cases the teacher cannot obtain information as to the length of the duration of a child's school period. There is no doubt that this difficulty leads to a loss of time, as children do not begin the more difficult and testing subjects that belong to a secondary curriculum until they are fourteen. It leads also to failures that would not occur if the age of beginning these more difficult subjects were earlier. In the opinion of several members of the Commission who were especially concerned with secondary education, it was estimated that a loss of at least two years was made in this way. This opinion I can endorse from what I saw in the lower classes of the high schools.

Another characteristic of the high school in America is co-education. Boys and girls go through the same curriculum, are taught by the same teachers, and sit side by side in the same classrooms throughout their school careers in nearly all the public high schools. The advantages and disadvantages of this arrangement seem to have been fully discussed and anxiously considered. It is a matter upon which it is practically impossible for the occasional visitor to come to any conclusion that is worth having. I think, however, that one general observation which I believe was made by many of the Commissioners is worth recording, namely, that the relations of boys and girls in and out of school, of men and women students in the universities, as well as of men and women in the everyday walks of life, appeared to be more natural than in this country. There seemed, for example, to be no difficulty in business houses or in the administrative offices of colleges and universities in having mixed staffs, men and women working side by side without any of the hindrances to work that are heard of over here. That the testimony of the business men on this point was unanimous is shown by the fact that they regarded any question with regard to it with surprise. Among teachers the aspect of the matter that seemed to be in doubt was in regard to the influence of the mixture of the sexes on the standard of the work done. Several of the most able teachers with whom I discussed the matter were inclined to take the view that the presence of the girls tended to make the general tone of the work of the class less strenuous than it would have been had there been only boys therein. I cannot say that this impression was confirmed by any experience that fell to me. The work in the schools restricted to boys in Boston and in Lawrenceville appeared to be on the whole inferior in earnestness and in standard to that in the mixed high schools.

The mixed high school has had an important influence in determining the sex of the teachers. In the schools restricted to boys, both public and private, women teachers are rarely to be found, but in the high schools the women in most cases in the Middle West predominate in numbers, while in the East their number is steadily increasing. The employment of women to the exclusion of men in the public schools is mainly a question of finance, but the demand for men's labour in the industrial and commercial world is also largely responsible for it.

From these general explanatory notes on the universities, colleges, and high schools, I pass to the consideration of some detailed characteristics.

A 1.—The Curricula of Universities and Colleges.

From being originally restricted and rigid the curricula of the colleges and universities have become free and flexible. This great change has been taking place for the last twenty or thirty years, but has been especially rapid in the last ten. Harvard under the influence of its powerful president, Professor Charles B. Eliot, has adopted the "elective system," in which English is the only compulsory subject for the undergraduate course. The other universities and many of the colleges have followed the lead of Harvard, either wholly or partially, many of them adopting the modified elective system which was instituted by Johns Hopkins University in the undergraduate school of that university, and which will now be explained. There are various groups of study, each one having a predominating characteristic, such as classical, historical, linguistic and literary (both ancient and modern), and scientific. The main lines of study in each such group are prescribed. The student chooses his group and has certain elections within the group. In making these elections he must, at almost all universities, take the advice of the proper professors, and his course must be approved. In the same way, at those universities at which the Harvard system of election has been adopted, the student is prevented in almost all cases from taking as his course a mere collection of odds and ends by the necessity of obtaining the approval of the Dean of the Faculty to that course. Thus the course of study is the fundamental thing. Graduation is a slow process spread over the whole course of study. It is, as its name implies, a series of steps; these steps are in the American University taken day by day and week by week, and failure in the daily work means either withdrawal from the university or repetition of the work failed in. The course is regarded as a unit, progress in the latter parts being impossible unless the earlier parts have been well and thoroughly learned.

The professors and teachers of the universities and colleges conceive that their main function is to direct and guide the studies of their students, and not merely to give them formal lectures. The number of formal lectures now given is very small, and the tendency is for them to diminish. Such formal lectures as are given are followed a few days after by what are known as "quizzes." These are conversation classes, in which the professor or one of his assistants converses and discusses with the students the main points of the lecture and of the reading that ought to have been done in connection with the lecture and the difficulties that the students have found. From time to time, within the discretion of the lecturer, and differing according to the need of the subject, written work is set and is carefully gone over in most cases with each of the students. This system, which is becoming the general one, results, when really well worked, in the most perfect control of the student's work, in uniting what have been called in this country the professorial and tutorial systems, and in bringing about fruitful co-operation between the students and teachers, both senior and junior, of each department concerned. In order to carry this out each department must have a large staff consisting of several professors, one of whom acts as the director or head of the department, of associates or, as we call them, assistant professors, of lecturers and tutors. The presence of a large staff makes it possible to

divide the work in a productive manner. Some members may be devoted entirely to graduate and advanced work, others prefer to do both graduate and undergraduate work, and others again devote themselves entirely to undergraduate. The presence of these three kinds of teachers seems to give strength and vitality to the institutions. In practice each department would have about two-thirds of its strength engaged in advanced work and capable of doing it, while the remaining third is not so engaged, and is not in many cases capable of undertaking it.

The American University in thus treating each department of learning as a whole instead of having, as in England, a number of teachers attached to different institutions, each having an institutional department of his own, is able to organise and develop the teaching much more fully, and without the strain that inevitably results from the separate collegiate system, whether it be the tutorial, as in our older universities, or professorial, as in some of the newer.

Each department is in this way an organic whole. Each teacher has the opportunity of doing that particular piece of work for which he is most suited, though he is not necessarily restricted to one piece. Thus to take the teaching of mathematics, which is with us often a vexed question. Owing to its importance almost every undergraduate student takes at some time in his career a course of mathematics. By special division of the work among the members of the mathematical staff, the universities are able to ensure that each group of students gets the kind of mathematical teaching that is most suitable to his requirements. For example, one or two members of the staff will be entrusted with the teaching of mathematics to engineering students, but will not necessarily be restricted to teaching those students. These teachers are kept in touch through their colleagues with the larger general aspects of mathematical teaching, even though the immediate work that they have in hand may be of a restricted character.

The same thing applies to all the departments to a greater or lesser extent according as the staff of the department is large or small. The importance of this unity of departmental organisation in the university is as great for the teacher as for the taught. His colleagues exercise a modifying influence on the teacher who is inclined to cranks and fads, both in his teaching and in his examining, and by constant intercourse the work of all the members of the department becomes unified without being uniform. With such an organisation as this the presence of an outside examiner as a means of maintaining the standard is unnecessary, even where the departmental staff is a comparatively small one.

It is a fundamental principle in American universities that the man who is fit to teach is also to be trusted to examine his own students. The external examiner and the external examination system is practically unknown in the United States. The teachers are free, and being free they are enabled to give to their courses a breadth and depth that would be impossible were they hampered by the knowledge that their students were to be tested by examiners who knew little or nothing of them.

The tests and examinations for undergraduate students leading to the bachelors' degrees are conducted almost entirely by the individual teachers, and with the most satisfactory results. There may be abuses from time to time by individual teachers, but, as far

as I was able to discover, the evils resulting from such occasional abuses are less great and certainly less widespread than the evils of the examination systems of the British universities. In the universities of the States there seemed to be an atmosphere of quiet study and scholarly work which is apparently continuous throughout the session, and remains undisturbed by feverish bursts of cramming such as characterise British colleges and universities.

The American system requires elaborate daily care and the guiding, watching, and recording of students' progress, but that care probably does not involve a greater expenditure of energy than the organisation of the unwieldy examination system of this country. Moreover, as it is spread over a large period it cannot involve the terrible weariness that is brought about by the British system.

From the point of view of the student, I have no hesitation in saying that the result is far better. When the American scheme is well carried out it ensures continuous and steady work. It makes "slacking" impossible, and thus prevents waste of time during some of the most critical and valuable years of a young man's life.

The influence on the teacher is no less salutary; the American teacher thinks of his functions as a teacher and director of studies, while the British teacher is driven by force of circumstances to conceive and direct his work entirely in terms of examination. As long as examinations control the teaching, whether in universities or schools in this country, so long will the teaching continue to be academic in the worst sense of the word, cribbed, cabined, and confined.

From what I saw in America I am convinced that in the free system of teaching that exists there, even the weak teacher gives stronger guidance to his pupils and produces better educational results than he does here. The reason of this is obvious when we consider that in the American system the teacher is judged by the standard that he makes for himself, while with us the teacher has a standard imposed upon him by the external examining body, which is almost inevitably a standard that tests whether the pupils have obtained the information to be found in certain prescribed books. For the English teacher with a prescribed amount of work to be got through in a certain time, whether such work is suited to the ability of the class or to the teacher's powers, life is a continual rush. There is no time to deal in educational fashion with the mistakes of his pupils; they are simply told that they are wrong and one of the others is set to put them right. For the American teacher life is in comparison a leisurely one. He makes as much if not more educational value out of the blunders of his weaker pupils as out of the correct answers of the stronger ones. He cares for the development of his class as a whole, and not mainly for that of those who will do him the most credit in answering the questions of an outsider.

The degree to which examination by external bodies or examiners is regarded as baneful both to the pupil and for educational organisation is shown by the fact that it only exists for the purposes of professional qualifications in certain States and for the purposes of admission to universities and colleges in certain other States. Even where it exists the evils that have been so strongly felt in this country have been largely guarded against. Thus, an examination board has been formed by the Association of

Colleges and Preparatory (*i.e.*, preparatory for the colleges and universities) Schools of the Middle States and Maryland for the purpose of instituting a common standard for admission to the colleges belonging to the association and of holding one examination for the purpose of that admission. Great care has been taken that the examiners in each case shall be experienced teachers, and inasmuch as the examination for admission to college is the test of the work done in the preparatory school, a large proportion of the examiners consist of masters who have been teaching in one or other preparatory schools. The papers set by this examination board seem to me on the whole admirable and well calculated to stimulate good teaching.

While this has been done in the East in order to obviate a multiplicity of examinations, and in order to remove the difficulties that beset the old-fashioned matriculation examination which was mainly conducted by college or university professors, in the Middle West an even more significant plan, known as the "accrediting" system, has been originated, and this system is rapidly spreading into the East. The accrediting system seems to have originated at the State University of Michigan, and to be largely due to the wisdom and foresight of President Angel. The old matriculation examination was not only found to be an unsatisfactory test of the pupils, but was found to be an actual bar to any satisfactory relations between the universities and colleges and the schools. The University of Michigan determined, therefore, to institute a list of high schools, to be known as "accredited schools," from which school pupils who presented certificates of having satisfactorily passed the full four years' high school course would be received without examination into the university. One of the university professors of education has for his main function the visitation of schools with a view of testing their fitness to be placed on the accredited list. He is from time to time assisted by his professorial colleagues who inspect the schools from the point of view of their special subjects. Schools that are found satisfactory in all respects are placed on the accredited list; others have their deficiencies pointed out to them, and are told that when these are remedied they, too, will be put on the list.

When a school has been placed on the list it is still subject to inspection. It receives a report from the university upon each student that it sends thereto at the end of his first session or first semester, as the case may be. The university reserves to itself the right to refuse a student who is found to be insufficiently prepared to go on with his studies, and also the right to withdraw from the accredited list the name of any school that is proved by the pupils that it sends up to have an unsatisfactory standard. The result of this is that in the States where it has been adopted the whole educational system has been unified and strengthened. The university is looked up to as a counsellor and friend of the schools; the university teachers learn much by continued intercourse with their scholastic colleagues and *vice versa*.

In this way the barriers that exist in many countries between the various grades of teachers are rapidly being removed, and what is even more important the teaching of all classes of teachers is thereby made more direct, more stimulating and attractive to the students. Here and there I met teachers who disliked the accrediting system and preferred the old examination system, but

the vast majority were strongly in favour of the former. The view of the majority was that no system that had been, or as far as they could see, could ever be devised, would ensure that all the students entering a given class in a given year at the university would all approximately start with the same amount of training and learning.

At the same time the accrediting system, as against the older system, leaves the teacher and the taught free, and thereby stimulates better training. So strong is the feeling in favour of this system in the Middle West that even entrance scholarships to the colleges and universities are awarded by it. The entrance scholarships are allotted among the accredited schools, each school taking its turn and receiving as nearly as possible the number of scholarships proportioned to its own number of pupils and to the number who proceed from the school to the university.

The evidence given by President Harper in favour of the system was very striking. He said that when he left Yale to go to Chicago he was opposed to the accrediting system, but that experience in the Middle West had led him to change his opinion, and that now he is a firm believer in it. In order further to extend the system and to prevent needless repetition of work the State universities of the Middle West propose to draw up a list of the schools that can be accredited by all of them. The standard for this joint list is to be somewhat higher than the standard adopted by the universities singly for their several lists. As I have already said, this system is gaining favour in the East, and with the exception of Harvard, Yale, Princeton, and Columbia universities it has, I understand, been adopted more or less by all the Eastern colleges and universities. This evidence of the value of a course of study of fixed duration carefully graded and carefully watched at every turn is a signal triumph as compared with the sort of racehorse method that turns our schools into training grounds for the examination race that occupies a few days at the end of a boy's school career, and upon which his future is made to depend to an alarming extent. It is perhaps one of the most noteworthy contributions of America to educational progress. Its adoption indicates that America at all events realises that education is a slow process which must be spread over certain fixed periods of time, that there are no short cuts, that even though the boy may have acquired the requisite information to answer the questions of an outside examiner, it does not follow that he has been satisfactorily educated to the standard that that examination is supposed to represent. It is only another instance of the responsibility and consequently of the dignity that is cast upon the teacher. To dignify the teaching profession is a certain way of making it strong. To deprive it of dignity by showing lack of trust in it by all sorts of rules and regulations and by outside restrictions and examinations is a sure way to degrade it, and so to diminish its influence for good in the State.

It was delightful to find how keenly the teacher realises the value of this dignity that results from freedom. This feeling was most strikingly expressed at a meeting of elementary teachers in Chicago which I attended, and which was called for the purpose of considering a series of detailed schedules for the subjects of the elementary and grammar school grades. With the exception of one or two teachers who were willing and anxious to have any

kind of a schedule "if only they were provided with a guide as to what they were expected to teach," the whole meeting was agreed that while such schedules would be very useful as guides they would be disastrous if they were adopted as binding. It is this spirit of determination to preserve the power of individual initiative that gives to the work of universities and schools alike a freshness and attractiveness, the value of which it is impossible to exaggerate. It brings with it a true spirit of research, and makes that spirit run through all stages of education. There is nothing that augurs better for the possibilities of America than the way in which all classes of teachers seem to have grasped the idea that research is a method that should be adopted from the earliest stage of education, as opposed to the method of merely imparting information. If American teachers maintain this view the output of original work from the universities, which is already significant, ought, within the next few years, to reach a very remarkable standard, especially when we remember that many of the universities are already spending largely on libraries, on expeditions and explorations, and on laboratories for the sole purpose of promoting original research.

When we turn from these general considerations to the consideration of the teaching of the individual subjects, the value of this freedom becomes even clearer. I propose to deal briefly with the teaching of a few of the subjects to which I gave special attention.

A 2.—The Teaching of Certain Subjects.

English.—There is a growing conviction that for the purposes of culture, as well as for the general purposes of literary and linguistic training, the heart and centre of the education of an American child is to be the English language and literature. This view has been most ably maintained for many years by President George MacLean, of Iowa University, and is being admirably worked out by his able staff. What the classical languages of Greece and Rome were in former times in English education the English literature and language is becoming in American schools and universities. Each of the universities places in the forefront of its entrance requirements a sufficient and satisfactory course in the English language and literature, the time given to such course varying from three to five hours a week throughout the four years of the high school. The main tests that are given in the progress of the course and after it are those that test the powers of writing English composition. Compositions on themes selected by the pupil, compositions on the themes suggested by books read in the progress of the course representing different methods of expression, such as the descriptive, the narrative, the expository, the persuasive, the argumentative, are set at frequent intervals. For all the undergraduate students at the universities English is a compulsory subject in the freshmen (first) and sophomore (second) years. In many universities there are five recitations a week, and almost as many written themes, and the results that are being produced are most striking and interesting. The object aimed at is to enable every student to express his thoughts and opinions in a clear and intelligible fashion. The object is not to turn them all into men of letters, "for men of letters," as a distinguished American professor said to me, "are made by other processes."

The need for such teaching of English composition is probably greater in the States than in this country, owing to the continual immigration of non-English speaking people. In view of the difficulties that must be caused by the presence of a large number of students whose native language is not English, the results of the present system of teaching English composition are eminently satisfactory, and will tend to become more so as the number of teachers trained for the purpose increases. In the English literature work in universities, colleges, and high schools, while less detailed information is possessed by the students than by English students, there was a stronger grasp and knowledge of the literary subject matter and a fuller appreciation of literary form and of great principles than is usually found in England. In other words, English literature is a humanity, in the large sense of the word, in American institutions. It is possible for it to be so, because those institutions are free from the restrictions imposed by examination papers requiring cut and dried answers. The best things that are to be got from the study of any literature cannot be tested by written examinations, and least of all by examinations conducted by those who have not taught the person examined.

Modern Languages and Literatures.—Much that has been said with regard to the teaching of English literature applies with equal force to the teaching of modern literatures. In most of the American institutions there seemed to me to be a fuller appreciation of the literatures of France and Germany as humanities than in this country. As in English so also in these subjects that appreciation was kindled and helped by the use of books, pictures, and illustrations which were often to be found upon the walls of the appropriate class-rooms.

I was struck on several occasions by the understanding that both teacher and taught had of the meaning of France and Germany in the periods of history or literature of which they were speaking. For example, a class in a high school in New York that I visited knew not only in an accurate way the main facts of the French Revolution, but was also able to discuss in a most striking manner the meaning and influence of that great movement on European and American politics. They knew, too, something of the literary aspects of the Revolution. It was clear that their teacher got them to think on the matter and had directed them to read such books as were suitable to their age. The same class, it must be admitted, was, from our point of view, woefully ignorant of the niceties of French grammar, some of the pupils failing even in the conjugation of the verb "avoir." This experience proved to be typical of the French and German training in America.

At the universities a large amount of work is done in modern languages, and it is of a most varied character. There are classes, for instance, in some universities for the special benefit of science students; there are others where students who are interested solely in the modern forms of these languages can get full and complete literary courses; there are others in which the earlier periods of the languages and literatures are treated in a scholarly fashion.

Most of the men who conduct the courses in mediæval languages and literatures have been trained in Germany. It is noteworthy, however, that most of them are careful to avoid a narrow philological treatment of their subject, and while they study minutely the language and form of mediæval works, they do

not forget to handle and point out the spirit of them. All the other principal modern European languages and literatures are studied at one or other of the universities, taking their place on an equal footing with the other subjects. The number of students taking them seems to depend somewhat upon the nature of the population of the district that is mainly served by the university, and to some extent upon the trend of political events. For instance, at Iowa, where there is a considerable population of Scandinavian origin, there is a large number of students of the Norse languages most ably directed by Professor Flom, while at Yale Spanish, in view of the conditions in South America and of the recent Spanish war, attracts a considerable number of students, who work under the guidance of one of the most distinguished romance scholars of the day, Professor Henry Lang.

History and Civics.—The heart and centre of the history teaching is the history of America, but by the careful grading of the work in the high schools, and by the wealth of teaching in this subject in the colleges and universities, the student is enabled to get direction for his work in almost all branches of history. Here, again, as in the teaching of literature, the methods seem to result in giving to the pupils a truer insight, a wider and larger grasp of historical movements than the methods used in this country. The knowledge of details and of minutiae is undoubtedly less exact. Everything that can be done to make the teaching realistic and vivid in the form of models, pictures, diagrams, maps, and charts seems to be done in the best-equipped schools, colleges, and universities. In those that are not so equipped the belief in the realistic and vivid methods is just as real, though the means to carry it out are not at their disposal.

Among the various branches of history that known as "civics" receives perhaps the most careful and detailed attention. It is practically the history of the present time. In each State children are taught the history of the constitution of their State. They are made to understand the prevailing methods of government, and to realise the important part that each of them may play in that government. In every State alike great care is taken that the government of the nation shall be understood and realised, and the opportunities of anyone, however poor and lowly, for obtaining a place in that government are emphasised and illustrated from the lives of the great men of the past. It is by these means, and by a careful explanation of the symbolism of the ever-present flag, that they succeed in making into thoroughly good and loyal Americans the most heterogeneous population.

This subject of civics in its higher developments is represented by political science, which is most carefully encouraged in all the universities. They are all busy working at their own special problems, and by this means they knit themselves into the communities to which they belong. The activity of the universities of the Middle West in this respect is very striking. I was specially interested in the organisation and development of the department of political economy at the University of Wisconsin, at Madison, under Professor Ely. From that department a large amount of valuable work has already been turned out.

Psychology.—Another subject upon which large sums of money for equipment are being spent is that of psychology, both in its experimental and theoretical aspects. Almost all the universities

have carefully-constructed psychological laboratories for the purpose of making minute observations and measurements of psychological phenomena. Professor Titchener, who failed to find means to carry on his work in this country, left England and became the head of the department at the Cornell University, where he has promoted great and important work. President Stanley Hall has given by his researches at the Clark University to the subject a renown and distinction that it did not before possess, while others, like the Professors at Iowa and at Brynmawr College, are conducting important researches in this field.

There can be no doubt that for physiologist and for teacher alike the subject is of great importance, but it can only be furthered by men who devote themselves solely to it; it must not be regarded as a mere off-shoot of physiology, or a subject that can be dealt with in his spare hours by the professor of philosophy.

It is also a subject that in a very special sense requires endowment, for the number of students that can profitably take it up as a subject of investigation is necessarily small, though the number to whom that investigation will be useful is certainly large. The subject has been neglected in this country, and even where a professorship and lectureship or readership has been established it is insufficiently endowed and equipped.

B.—The Training of Teachers.

As in England so in America, there is no educational subject that leads to greater diversity of opinion than the training of teachers. It is a subject that has many aspects owing to the very various grades and kinds of teaching that are required. The training of the elementary teacher and the grammar grade teacher, of the high school teacher and of the university teacher, must each be so different that it is well nigh impossible to find anything more than the broadest generalities in common to them all. The fundamental conception upon which all teachers are agreed in theory, however divergent their practice, is that every teacher, whatever kind of teaching he may be going to do, should be thoroughly trained and disciplined himself in all those things that belong to a general education before he begins his training; in other words, that the training of the teacher should occupy the same place in relation to his general education as the training for any other profession. This ideal is being deliberately urged in many of the United States. In some, perhaps, it has hardly yet been conceived, but the existence of it in the others is certain to have its influence. In the more advanced States the conditions of admission to the normal schools require students to have been at least two years in a high school; that is to say, that the student must be 16 years of age before he begins his training course. The high school is expected to give sufficient general education to those who are about to take up elementary or grammar grade teaching. The normal school gives them their professional training in a course of at least two years.

I do not propose to deal with the work in the normal schools, because other members of the Commission made a more detailed study of them than I did. The institutions for training to which I gave special attention were the Teachers' College, with its observation school (Horace Mann), and its

practising school (Speyer School), under the direction of Dean Russell, in connection with Columbia University, the School of Education at Chicago, under the direction of Professor Dewey, and the departments of education at Harvard and at the several State universities of the Middle West.

These institutions are resorted to by those elementary teachers only who are ambitious enough or who have reasonable expectations of becoming superintendents of schools, by those who desire to become secondary teachers, by qualified secondary teachers, and by those who look to educational administration as their life work. The most elaborate of these institutions are the two first named.

It was rather difficult to appreciate and estimate the value of the Dewey School at Chicago, as it had only just moved into its new and beautiful buildings, so that what I have to say will in the main be drawn from my experience at the Teachers' College in New York, which is in many ways the pioneer institution, and in the completeness of its equipment is certainly unique. It stands just outside the campus of Columbia University, with the Horace Mann School immediately to the west, a fine pile of buildings, as also is the hostel for women students on the east and its practising school a few blocks to the north. To some extent it has a separate staff of its own, but nothing that is to be found in Columbia University is duplicated at Teachers' College. The undergraduates receive the larger part of their undergraduate course within the walls of Columbia University. The work they do at the Teachers' College in pedagogy, in practice and kindred subjects forms part of their four years' course for the degree. Thus a student who aims at being a secondary teacher gets in his undergraduate course some preparation for his work in life. He is not required to take a full undergraduate course with pedagogy and allied work as additional. At the completion of his undergraduate course the student may obtain a special diploma for teaching certain subjects by taking a course in those subjects from the teachers' point of view. In this way the Teachers' College at Columbia trains a large number of high school teachers, sending them out ready to teach the special subjects in which they are interested. It also does a large amount of graduate work. The men and women in the graduate class come from all parts of the States, as well as from other countries (there was one student from Oxford), and there they obtain the training that fits them to be superintendents, whether of elementary or of high schools, head-masters of high schools, and administrative officials.

The organisation is very comprehensive, and its results seem to be very satisfactory. Among the undergraduates were students who had resigned good positions to come to the college in order to fit themselves more adequately for some higher office. There was an atmosphere of noble energy and zeal throughout the institution. The Graduate Club afforded me one of the pleasantest evenings I spent in America, and from it I learnt much as to the spirit of the institution. As far as I could gather, the scheme of work at Chicago, though different in detail, is much the same in its main outlines. The relation of its course to the university seems less clearly defined. By these means it casts its net somewhat wider than the Columbia College, and seemed to include among its students a considerable number of those who are preparing to take

up elementary teaching. At the other universities to which I have referred, the department of education is more completely an integral part of the university than at Columbia or Chicago, and is organised like the rest of the university departments. While good work and substantial progress is being made at these universities, it is clear that the work of training, especially that of training to teach certain defined subjects, cannot be altogether met by the ordinary university staff who teach these subjects. But while many in America are willing (and where they are not willing are obliged), as they are in this country, to accept the university degree as an indication of the power to teach, there is, on the other hand, a growing number that believes in the importance of training.

In the old and somewhat conservative State of Massachusetts, the training department met for some time with little favour. There were few schools that were willing to be used either as observation or practice schools, but now the number is steadily increasing and some that apply are not worthy. In the State universities of Michigan, Wisconsin, and Minnesota the would-be secondary teacher can include his training in his under-graduate course, and can emerge with the bachelor's degree, together with a diploma entitling him to teach the subjects of his course for two years in the public schools subject to good conduct. These universities are all agreed that this is not quite enough, but it is as much as they could ask for and get at the present time; they are prepared to ask more when opportunity occurs.

The men who fill the lower grades among the university teachers are expected to have gone through some such course of training as the candidates for high school teacherships, while those who look to university professorships have generally been abroad, more often than not to Germany, where they have taken their doctor's degree, or to one or other of the universities at home which are distinguished as research schools, the two most prominent of these being the Johns Hopkins and the Clark Universities.

The important fact brought home to one by all this is that very large numbers of those in authority in America have recognised the need for the professional training of teachers of all grades, and that active steps are being taken to provide the training that is deemed necessary. In this way and in others already alluded to, it will be seen that the teaching profession in America is rapidly acquiring a dignity and force that must make it a great national power.

C.—Methods of Organisation and Administration.

There is nothing in which Americans seem to excel more than in general methods of organisation and administration, especially when they have to be applied on a large scale. The constitution of educational government is on the same general lines as that of the national government. The State, or city department of education, the universities, colleges, or high schools, all alike are controlled to an extraordinary degree by the president or director, the theory being that the strong government of one carefully selected man is superior to the best possible government of committees. The director or president has, of course, to refer continually to his board, his regents, or trustees, as the case may be, and, in a sense, to take his instructions from them. In practice, however, he is the guiding and determining spirit of his organisation. Although here and

there dissatisfaction was expressed with the power of the chief officer, on the whole the system seemed to work well. At most of the universities and colleges there is a growing tendency for the president to seek the advice and help of his professorial colleagues in making appointments and for other purposes, but it seems that only at the Yale University is this a constitutional necessity.

The same sort of organisation is extended to the departments, the departmental head or chief being directly responsible through the president for the organisation and well-being of his own department. The power or value of the departmental organisation at the universities and colleges has already been referred to. The value of this departmental organisation in large institutions can hardly be over estimated, for it enables large numbers of students to be dealt with in a personal way, and thus one of the greatest drawbacks to a large institution is overcome.

It is by means of an extension of the departmental system that the relationship between the professional schools in the universities to the faculties and departments of pure science has been determined. Speaking generally, each professional school is for the purposes of the curricula a departmental unit, having, so to speak, a number of sub-departments within it, but the relation of the professional school to the departments of pure science is that of one department to another. By this means a tendency to specialise, let us say, the teaching of chemistry, in a medical or engineering direction, is obviated. Chemistry for all classes of students is a matter of concern for the department of chemistry. It may be convenient, as already said, to group together under one teacher those who are studying chemistry with a view to medicine, or those who are studying chemistry with a view to engineering, but this is a very different thing from the method of organisation that is found over here in many places, whereby the future students of medicine, or the future students of engineering, while still students of pure science are segregated from their scientific fellows. By this means, too, attempts to diminish the amount of pure scientific work to be done by the student are prevented, to the great advantage of the student and of his future profession. There is probably no subject of university organisation in this country that is so likely to lead to disastrous results as the failure to delimit the sphere of activity of the professional school.

There is no need so great in this particular direction as a clear understanding in regard to the training in pure science that is necessary before an attempt is made to apply it. The problem is of equal importance for the universities whether looked at from the point of view of professions like law, engineering, and medicine, or of that of the teacher.

Another important manifestation of this power of organisation is shown in the general plan of the buildings and equipment of educational institutions. The sites of the universities and colleges which are not actually in large cities are in many cases to be numbered by hundreds of acres, while those like Columbia University and the University of Chicago, which are placed actually in the large cities, have scores of acres. One sees at a glance that in developing these magnificent sites the university in each case has set to work with a great scheme, not necessarily a scheme that was to be realised at once, but a scheme that contemplated the development

of a great whole which the governing body of the university intended to realise. It is by thus clearly making up their own minds, and by presenting to the people of Chicago a well-developed and well-thought-out scheme, that Mr. Rockefeller, President Harper, and his colleagues have been able to do so much in a comparatively short space of time. They have utilised institutions, such as the Rush Medical College, which were already in existence, and have brought them into harmony with the general university organisation which they have created. Just as the whole has been carefully thought out, so each separate building is carefully planned to meet the needs for which it is built. Over this preliminary work much time and pains are spent, but when the scheme is once made, its realisation is rapid. Thus, to draw a further illustration from Chicago, they are now busy there planning and devising a school of advanced and graduate medical studies, which shall be worked in conjunction with the hospital that is to be built and managed by the University itself.

A strong attempt is made in all the newer buildings to combine a suitable dignified exterior with a well-planned, well-equipped interior. The form of building that is preferred to any other is that of the H, that being the form from which the greatest amount of air and light may be obtained. The greatest care is spent on the heating and ventilating of these buildings. One superintendent told me that he now spent as much on the heating and ventilating of a building as a few years ago he would have spent on the whole building itself. It would, I feel sure, be worth while for the new educational authorities of England to note carefully the American methods in these matters.

The idea that leads to this great care in matters of building and equipment shows itself again in the care that the universities or colleges give to the individual student. I have already pointed out that the system of graduation leads to a more careful supervision of the undergraduate than ours does, but the university or college is not satisfied with that; it looks after and provides for his physical and social well-being. At almost all the universities and colleges that I visited the student is examined physically at the time of his entry; he is required to go through during the first two years of his course certain regular physical exercises if he be normal, certain specially-arranged curative exercises if he be defective or weakly. This work is superintended by a suitable qualified medical man who has made a speciality of it. The same regulations are applicable with slightly different conditions to the students at women's colleges, and to the women students at the mixed universities. There is no doubt that this care is having a very important influence already upon the national physique.

In like manner the authorities of the universities and colleges find it comes within their province and is fully worth while to guide and control to some extent the athletics. By the share that they are taking in the general government of the athletic sports, they are enabled to fight the tendency towards professionalism that is shown in all sport, and in this fight they are warmly supported by the students. Although elaborate pains are taken to select and train the university teams in baseball and football, the whole of the athletic energy of the university is not spent on the one team. The one representative team manages to maintain a high standard

because men of every year are expected and encouraged to organise their own team. In this way, while public interest is, of course, centred on the work of the representative team, a great deal, and perhaps the greater part, of the useful, effective athletics is to be found in the teams that do not play in public. There are few things more noteworthy than the public interest in college and university athletics.

It was my privilege to be present at the Harvard-Yale match which was played last year on the "Soldiers' Field" at Harvard, where a great stadium capable of accommodating nearly 40,000 people has been built. When visiting the stadium some time before the match, I could hardly believe that it was ever filled to watch a university match; the sight of it filled to overflowing on the occasion of this match was, therefore, the more impressive. Like the game, like all that goes to make up these American institutions, even the cheering is carefully organised and controlled and directed by cheer-masters. Although the organised cheer lacks something of spontaneity, it leaves an impression of irresistible power and vigour of the same kind as the organised march of a well-trained band of soldiers.

The unit of social organisation at the colleges and universities is the "class." The class comprises the students who enter in any given year. A class is described by the date of the year at which it ought to graduate. Thus the students entering in 1900 are known as the class of 1904; those entering in 1901 as the class of 1905, and so on. Each class elects its president, its secretary and officers, and organises itself in such ways as seem to it desirable to realise its own powers and capabilities.

Numerous societies grow out of the class organisation, and some of them become permanent. Many of the universities provide what are known as "dormitories" and "halls," where commons are served for their students, but others do not provide anything in the form of residence or facilities for obtaining meals. The nature and function of the special societies that belong to the universities and colleges are determined by these circumstances. For instance, at Princeton, where there is no commons hall, the students have met the need by organising a series of clubs at which meals can be obtained.

Another noteworthy and interesting feature of student life in America is to be found in the Greek letter "fraternities," which exist in all universities I visited except Princeton. Each of these societies is known by a Greek letter, such as the "Delta Phi" and the "Alpha Delta Phi." As far as I could ascertain the chief, if not the only, mystery attached to them is to be found in the significance of these title letters. The societies are bonds of friendship and good fellowship not merely in one university but practically throughout the universities of the United States. Thus the Delta Phi's or the Alpha Delta Phi's have chapter houses in almost all the prominent universities, and the fact that a man is a member of one of these societies secures him a welcome from its members wherever he is and from whatever university he may come. They supply in short the freemasonry of the collegiate and university world, and are in their best developments valuable organisations leading to strong friendships, and giving to young men rallying places while they are making their start in life. It should be added that many of the societies have chapter houses in the great cities to

which the young man fresh from college or the university may at once turn. Women students are developing similar organisations under the title of "sororities." The existence of these is only one of the many evidences that I came across of the universality and strength of the organisations in the States for promoting educational ideals and for making strong the influence of the colleges and universities in the life of the nation.

Just as the respective classes maintain their organisation up to the end of their college life, and thereby are enabled to reassemble from time to time and thus to strengthen their own university and college, so by means of the Greek letter societies at the annual conventions which are held at different universities the life of university men throughout the country is consolidated and strengthened. Among them what the Phi Beta Kappa students do is an interesting example of the inter-relation of intellectual and social activities. It seems that each college and university has the power of appointing from the graduate class of each year a certain number of the best men, the number being fixed by its size, to be members of the Phi Beta Kappa. These members are actually spread all over the States, but they unite together in the great centres wherever sufficient numbers of them are to be found. Thus in New York there is a strong organisation which comprises men of all ages down to the youngest graduate and men from a large proportion of the whole number of colleges and universities that have the power of appointment.

All these activities in which the universities and colleges themselves have a certain share make an elaborate central organisation necessary. The administrative departments of the various universities were of great interest, most of them combining in a very marked degree the power of dealing accurately with details with simplicity and efficiency of working. It was interesting to learn at several of the universities and colleges that experience had shown them that the best people to fill the chief administrative offices were university and college trained men; that from no others is it possible to obtain the interest and sympathy necessary for the working of great academic institutions. It was equally interesting to find that these administrative officers were all equally anxious to maintain their department as a means of adding to the efficiency of the respective universities, and were fearful lest in the establishment of procedure that seemed to make for order and despatch of business they were merely creating hindrances. This spirit, combined with the praiseworthy aim that the central office should endeavour to spare the professors and teachers any unnecessary routine tending to hinder their teaching, seemed to make a harmony in the university as a whole that was extremely beneficial.

I gave special attention to this question at Columbia and at Iowa. The efficiency of both struck me greatly, and I have no doubt that the same prevails at other universities. The same spirit of helpfulness is shown by the central administration towards the students. There are at almost all universities organisations in common with the central office for providing and helping students to find employment during the free hours of their student life and employment at the end of their student career.

The presence of the poor student has been already referred to, and in order to enforce the reference it may be worth while mentioning that such students undertake all sorts of employment

during their free hours in order that they may be able to pay their way at the university. Some of them, for instance, act as relief men from six to eight in the evening on the trolley cars (electric trams); others are waiters in hotels, or others again, in universities where there is a commons hall, wait upon their fellows. Others undertake secretarial and clerical work and so on in almost endless variety, but it is in many cases the university that helps them to such work, and it is to the university that they look for help during and after their student life.

It is a common thing for students to express their devotion to their Alma Mater by leaving some memorial behind them. Thus in many universities it has grown to be a practice for the graduate class of each year to make a collective gift to the university, and it has equally grown to be a practice for the classes in after years as they reassemble at the university to give of their greater wealth for the promotion of the welfare of their Alma Mater. There are many signs of this kind that give evidence of a strong *esprit de corps* in the promotion of which, it seems to me, the larger universities are not lagging behind the smaller colleges. All professors and students are equally keen about this. It is manifested in many other ways than those mentioned. For instance, at almost all the universities, whether State or otherwise, it is the custom to begin the day with an assembly, at which a hymn is sung, a passage from the Bible is read, and the Lord's Prayer is said or chanted. These exercises over, the president or dean, or whoever is presiding, takes advantage of the opportunity to announce matters of general university interest and to speak of matters of general concern. This simple devotional service and the general meeting together is highly valued by students and teachers, and is an interesting evidence of the freedom of the States from sectarian jealousy. The attendance at these functions is, of course, in all the State universities quite voluntary, but as far as I could ascertain it is usually good. It seems that the assembly at Yale was for some reason or other discontinued and was resumed by the express desire of the students.

In conclusion, I may remark that the educational organisations of the United States are practically in their infancy. That they are already doing a great work for the country there can be no doubt; that they possess many of the defects of youth there can equally be no doubt; that they also possess characteristics of strength I have already shown. Among these characteristics those which specially augur well for the future are the freedom of the teacher and the taught—a freedom which makes it possible to try experiments, and while it allows the man who is better suited for doing so to stick to the beaten path, yet enables the daring explorer to find his opportunity. These things, combined with the great hopefulness that naturally possesses a people living in a vast country, the resources of which have only just begun to be developed, make the possibilities of the nation almost limitless.

T. GREGORY FOSTER.

Mosely Educational Commission.

Report of Mr. W. C. FLETCHER.

The object set before the Commission was to inquire into American education generally, its extent, nature and quality, and the attitude of the people towards it; in particular its effect upon industrial progress.

As I had not the knowledge or experience necessary to form opinions as to the conduct of industrial concerns, nor even as to the merits and demerits of technical schools, I left this part of the inquiry chiefly to others. While, therefore, I took every opportunity of consulting my fellow Commissioners about these things, and of conversing whenever possible with employers and practical men, I confined myself mainly to what seemed my own proper business—inquiry into the secondary schools with special regard to their connections with primary schools and universities, and with the demands of practical life.

I came to the following general conclusions:—

1. Education of all sorts, but especially higher education, is much more widely appreciated in America than in England, by employers, by parents, and by students themselves.

2. It is, in its higher forms, much more widely spread than with us, and both high schools and universities are growing with a rapidity of which we have as yet no experience, and hardly even the hope.

3. The quality of the work (in the schools) is distinctly mediocre. In some respects probably the average work is better than ours, but I saw little or none that an English examiner or inspector would call good. On the other hand, the discipline and general tone of the schools is excellent.

4. Education is not hitherto the cause of American success. Material and educational progress alike arise from the conditions of the country and the spirit of the people. In some directions no doubt education has already accelerated progress, and in the near future it will probably become relatively more important in this respect.

5. America has realised more widely than we have done that educational short-cuts are a failure. There is a widespread belief in a prolonged course of general study previous to specialised technical work.

6. Educational progress on a large scale is dependent on public support and control of all grades of schools.

With these and with some subordinate points I proceed to deal in detail.

1. The evidence of appreciation of education is partly direct, partly indirect. In any country it is possible to find many persons professing to believe in education, others disbelieving. America is no exception. Probably to every profession of the sort quoted on the one side, a counter quotation could be made on the other. Nevertheless, unless those with whom we came in contact were exceptional members of American society, the balance of opinion is

very decidedly much more in favour of education than it is with us, and much more in favour of it than it was in the same country twenty years ago.

In engineering there seems no question about the matter. I quote the *Iron Age*: "All of our great corporations and manufacturing concerns seek the college man, but in no sense do they seek him because of his familiarity with their business or with any detail of their transactions; neither do they want him for the smattering of knowledge he may be able to devote to their interests. They take him solely for the training he has gone through and not for the wisdom that may be stitched in the lining of his cap."

The consulting engineer of the Rapid Transit Railroad Commissioners of New York gives in his report for the year 1900-1901 the following figures as to his staff:—

	College Trained.		Non-College Trained.		Per centage College Trained.
Chief Engineer	1	.....	—	.....	100
Deputy „	1	.....	—	.....	100
Division Engineers	5	.....	2	.....	71
Assistant Engineers	93	.....	16	.....	85
Rodmen	33	.....	12	.....	73
Axemen	11	.....	19	.....	37

The Pennsylvania Railroad, I was told, will take none but college men.

The manager of the Deer Plough Works takes two college men yearly, in the expectation that at least one of the two will show the adaptability, judgment, and powers of command that he requires. The same firm will not take boys in the office unless they are at least high school graduates.

The manager of a great retail store who engages a large number of employes told me that he looked chiefly for boys with bright faces and good mothers. High school graduates of 18 and 19 as well as elementary school boys of 14 he engaged largely; the former he expected to do much more than the latter. College graduates he was only too glad to get when he could—though, he added, it often took a few years to knock the conceit out of them—but found it difficult to get many of them against the competition of wholesale concerns.

I give these only as illustrations—my fellow Commissioners will have given many others—of that which cannot exactly be proved, but which seemed to us all to be the case, that education—and high education, whether specialised or not—is increasingly valued and demanded in the industrial world.

The indirect evidence is far stronger and more unquestionable. It consists in the remarkable increase of attendance at high schools and colleges. This involves a willingness to submit to taxation, not merely for elementary schools as in England, but even for high schools and universities. It further involves a willingness on the part of parents and of young people themselves to defer wage earning to a period much later than is common with us. A readiness also on the part of employers to engage boys of 18 and 19 or young men of 22 and 23—even in some cases of 26 and 27—a marked contrast to the feeling still strong in England that unless a boy begins work by 16 or 17 at the latest he will be of no use. This fact, with its implications being so important and coming again and again under my own observation, I will go into some particulars.

Attendance at Secondary Schools.

We have as yet no very reliable figures as to the numbers of boys and girls in secondary schools in England. The return issued by the Education Department in 1898 is confessedly incomplete both by excess and defect. Some schools were probably omitted, many children were certainly included who were receiving only primary education. However, the figures are near enough for a general comparison. In America the high school course begins at about the age of 15 on the average; in many respects, however, as I have pointed out elsewhere, this corresponds to a stage of development reached much earlier in this country. Not to make, therefore, the comparison too unfavourable to ourselves I will take those over 12 years as really receiving a secondary education corresponding to that given in the American high schools from 14 or 15 to 18 or 19. Even so the figures seem sufficiently startling. England with a population of 30 millions has 166,000 boys and girls receiving a secondary education, *i.e.*, 5.5 per 1,000; America with a population of 78 millions has 736,000, *i.e.*, 9.5 per 1,000. The North Central Division taken alone has 12 per 1,000.

Going into detail makes matters worse. I can find in the return of '98 no county borough which shows more than 12 per 1,000; the large cities (except Bristol, which has 11) have very much fewer—from 4 to 6 per 1,000. In America, on the other hand, Indianapolis has 17, Denver 18, Kansas City (Missouri) 22, Newton, Mass., 22, Topeka, Kans., 24. Even Chicago and Philadelphia have over 7. To realise fully the significance of this, it must be noticed that it is a new fact even in America. So recently as the year '89-'90 the American figure was much the same as our own—*viz.*, 5.9 per 1,000. In the twelve years they have nearly doubled their relative high school attendance.

The general increase in attendance at universities is quite as marked as that at schools. From 1873 to 1887 it fluctuated slightly between 7 and 8 per 10,000. Since then it has grown steadily and rapidly to 14 per 10,000—doubling in 15 years. At this rate we should have in England (excluding Scotland and Ireland) over 40,000 students in universities and advanced technical schools—and there are still people in the country who think that two universities are all we can possibly need! These figures do not include professional schools (theology, law, medicine) nor the agricultural and mechanical colleges due to the Land Grant Act of 1862. There is the further fact—most significant of all, perhaps, to those who can appreciate it—of the rapid development of post-graduate schools in the universities. So marked is this that the terms "college" and "university" are tending to be differentiated in such a way that the latter term almost implies the inclusion of this advanced work as a matter of course. Dr. Harris gives the following as the numbers reported in post-graduate courses: 198 in 1872; 1,717 in 1890; 6,000 in 1900.

Hand in hand with this extension of quantity in higher education, there has gone an improvement in quality. On the whole, institutions have tended better to define their position, are either ceasing to use the high-sounding names of college and university where they do not deserve them, or if they retain them are taking the necessary steps to justify their doing so.

We have then this fundamental fact, that whereas in England we are only just getting ready to think of developing and improving our higher school and university education, America, starting some fifteen years ago from a position much like our own, now has doubled the supply and improved the quality—and there is no sign of slackening in the rate of growth. This, I take it, is ample ground for the belief that education in America is much more highly—or at least more widely—valued than among ourselves.

2. I have practically dealt with my second general conclusion, giving it, in fact, as proof of the first.

3. The work in the schools is mediocre, the discipline excellent. My business was not, of course, to criticise the American schools, but to see what we could learn from them. This, however, necessarily involves such a consideration of their defects as may serve to warn us against certain possible mistakes. In estimating the work of a school or class one is constantly exposed to the danger of comparing it with some ideal school (very likely one's own school "as it was in my day") which never existed, but still, making all allowance for the "personal equation," I am satisfied that I saw constantly work done and *accepted* which few English teachers would accept. I did not, on the other hand, see the grossly bad work which we often get. I concluded that on the whole their average—even of performance, certainly of effort—was higher than ours, but that there is little or no work which we should regard as really good. I can illustrate this most easily from the Latin. I seldom or never heard an absurd translation; I often heard very inaccurate ones, not infrequently uncorrected. The translation was generally very fluent, but there was no attempt at elegance, and it was mostly slipshod. As one teacher put it to me himself, "The American boy has the *knack* of getting the general drift of a passage, but if you cross-question him as to the details he comes to grief." Most of the work I saw in modern languages and in science was old-fashioned and, I thought, rather barren—too much learning of rules and facts, and too little use and thought. The mathematical courses seemed to me very badly planned—even worse than our own have been. Much attention is given to English, both to literature and to the art of writing. It was difficult to estimate what the ultimate effect of this may be, but some of the work I saw being done seemed to me most inspiring and likely to be productive of much good. It was not merely that literature was being read, allusions and tricks of style noticed, but the effort was being honestly made to get down to the underlying thought, to estimate its value, and, if necessary, to criticise and modify it. Burke's Speech on Conciliation with America, for instance, is studied as a piece of argument, and constantly I found the effort being made to cultivate accurate and logical thought, and to attain fairness and breadth of mind in estimating motives and character. In the hands of the really fine teachers whom I found engaged in this work I felt that literature was being made what it ought to be, the means towards real culture of mind and spirit. Unhappily, fine teachers are not common, and this is work which above all other depends directly on the power of the teacher himself. Most subjects can be systematised so that with some guidance an ordinary man can teach them with some success. I doubt whether

this is the case with literature. However, whether this be so or not we have much to learn from America as to the proper place and use of English in our schools.

I have said that the actual quality of the work is mediocre. This is, of course, in part a serious defect arising from causes I shall deal with presently. But in part—as compared with our present condition—I am not sure that it has not its actual advantages. It is partly the outcome of leaving boys to do things for themselves; there is much less “teaching” and more “hearing of lessons” than is now usual in English schools. Even in the discussion of the big questions of history and morals opened up in the literature lessons, the main stress is laid on the boy’s own suggestions—drawn out, of course, by suitable questions—criticised and improved to some extent by the teacher, but chiefly by the class. So far as this is the case the mediocrity of performance is a good sign, implying that the work is honestly the result of the efforts of minds still immature indeed, but active and fresh. Our pestilent competitive examination system has done much harm in destroying this attitude of mind, not in the best students perhaps, but in the second best, who can be loaded up to the requisite standard, but cannot attain it in a natural healthy fashion. The lower standard of American schools as compared with ours is then, I believe, in part a good sign, indicating that more room is given for independence of thought and for real growth. It is to be hoped that in attempting to raise the standard America will not follow us in using examinations for the purpose.

However, allowing for this, the work is not as good as it might be, especially considering the advanced age of the boys. On the whole it seemed to me, and I found that American teachers themselves agreed with me, that at least two years are wasted somewhere in the course—boys of 18 are only where they might well be at 16.

This is due I believe chiefly to two causes—the fragmentary nature of the course of study and the absence of any real disciplinary work in the elementary schools, up to the age, that is, of 14 or 15.

For the most part too many subjects are attempted and each allowed too short a time, with the result that all are done in a very superficial fashion, and all their real difficulties avoided or never reached. A year of algebra, half a year of history, two years or even one only of French, a year of physics, half a year of botany and the like are common allowances. This is less the case than it used to be, and I believe that the remarkable revival in the study of Latin chiefly comes from disgust at the disappointing results of the smattering of many subjects offered in its stead, and the desire to have at least one subject which can be pursued in a thorough and businesslike fashion. Every curriculum should have at least one subject in which something like excellence is aimed at. In many American schools the only subject consistently carried through the four years is English, and while, as I have said, this is good in the hands of really first-rate men, I am sure that in the generality of cases it must degenerate into very poor stuff, with little value either of content or discipline.

The greater difficulty—of special interest to us in England just now—is that of proper co-ordination between the primary and secondary schools. In general, hitherto, America has ignored the difficulty, but is gradually finding out that it is one to be faced and solved. Its efforts in this direction are well worth our study.

The high school has grown out of and is simply superposed upon the elementary school, *i.e.*, a boy does not enter the high school until he has passed completely through the elementary school, that is not, on the average, till he is 15 or more. The elementary school is restricted to English subjects and arithmetic. Classes are large, and though the general atmosphere is pleasant, there is no very strenuous work—information is given but very little serious mental discipline. Entering the high school the boy—almost for the first time—meets difficulties. A great number are soon disheartened and fall out altogether, some are sent back to the elementary schools as being insufficiently prepared, while others no doubt remain a burden to themselves and to the school. As a matter of fact, more boys leave during the first high school year than at any other stage. I found sometimes that 80 or even 90 and 95 per cent. of the children leaving the elementary schools entered the high school, but perhaps a third of them dropped out during the first year. It is this, even more than boys leaving for business later on, which makes the first year so disproportionately large in many high schools.

On this system a very valuable seed-time in a boy's life is lost. The ordinary boy of 12 is quite capable of facing the difficulties of Latin or geometry, and if he does not do so his mind does not develop as it should if he is going to be fit for serious intellectual study later on. I concluded that for high school and university purposes the time spent in the last two grades in the elementary schools is worse than wasted. Whether the fault lies in those two grades themselves or lower down, I do not know, but it seemed pitiful to see great boys and girls of 14 and 15 doing work fit only for children of 11 and 12.

It is quite clear that the American system does not solve the question of co-ordination. By preventing overlapping it merely ignores the difficulty, and until the difficulty is fairly met it will remain a serious impediment to really good work.

This difficulty, however, is now being recognised and various attempts are being made to meet it. The most obvious thing to do is to introduce some of the high school subjects into the lower schools—algebra, history or Latin. There are two difficulties here: (1) It is hardly possible to obtain sufficiently good teachers. (2) These subjects are not of much advantage to those children who are not going on to the high school and so will only start them to drop them.

Of the three subjects mentioned as used in this way, one might note that algebra as taught in most schools is educationally worthless; history cannot easily be treated at this age as a discipline; Latin if well done at this stage would be invaluable. Geometry, if wisely handled, would be equally serviceable.

In some places the eighth and even the seventh and eighth years of the elementary schools are transferred to the high school. This does not meet the case of those who will leave early. Further, it is expensive and naturally leads to large classes in the lower part of the high school, and this tends to defeat the object. At Newton, Mass., an almost ideal solution of the difficulty had been found. Some ten years ago the Principal of the High School and the Superintendent of Education (chiefly concerned with the elementary schools) arrived independently at the conclusion that reform was necessary. It was decided to introduce Latin into the upper

grades of the elementary school. Those teachers who were likely to do well and who had some little Latin were invited to go to the high school Latin teachers to refresh and improve their knowledge and to get some idea of exactly what it was desirable that they should teach. (By degrees as new teachers were wanted, men specially fitted were chosen.) The two sets of teachers visit one another's classes for mutual observation and criticism. A formal conference is held every autumn, informal ones more frequently. Every quarter a report is sent to each elementary school of the performance in the high school of its old pupils.

The results of this are beneficial all round :—

1. Boys are much more advanced on entering the high school—they can begin *Cæsar* straight away.

2. The introduction of the harder work and of high school methods has raised the standard of the whole elementary school—not merely in the upper grades doing the new work but throughout by a steady downward filtering of its influence.

3. The barriers between the two sets of teachers are broken down, and necessary intercourse brings friendship.

The success of the system in Latin has to its use for other subjects—algebra and English.

It should be noticed that only those children in the grades who intend to go on to the high school take Latin.

Conditions at Newton are unusually favourable, and it does not follow that all that is done there could be done elsewhere, but it is, I believe, along such lines as these that the solution of the difficulty may be most hopefully looked for.

It will be noticed that here the influence of the high school on the lower schools is not unlike that of a university on the high school under the accrediting system.

I have spoken somewhat depreciatingly of the quality of the work—of the actual attainment, that is—in the schools. It is all the pleasanter to be able to speak in very high terms of their discipline and general tone. In nearly every high school I visited I was greatly struck and pleased with this. I generally went about alone, unannounced and often unobserved in the great corridors and staircases, and am satisfied that in the main I saw just the ordinary everyday behaviour—and it was singularly good. Except in Washington—where elementary school methods of moving about were observed—there was great freedom. A bell marks the close of a lesson. Boys get up and move off to their new class-rooms and are settled there by the next bell, but are free to talk and do as they please in the corridors—a freedom not abused. There was almost always thoroughly good order in the class-rooms, and while the appearance was often that of sleepy inattention, a sudden question or interruption often showed that the lesson was being followed steadily if not very keenly. Classes were not interrupted by my entering and leaving the rooms, and when, as often happened, boys were sent to the blackboard to write, the rest of the class went on just as usual. A well-planned and roomy building of course is a great assistance in these matters, and most of the schools I saw had this advantage; yet even in the Morris High School (New York), as ill-adapted to its purpose as any of our own schools, where narrow corridors and staircases lent themselves admirably to crushing and rowdiness, there was no supervision at all, but the same high standard of good order and self-restraint. The same

thing was very noticeable in the luncheon rooms. In one school (Chicago) for instance I found some 400 boys getting their lunch. About half had brought food with them, the rest were coming to the counter for plates of meat and potatoes, apple tarts, ice cream, and so on. There were no masters present, but the boys, though quite free and talking and coming up as they pleased, were notably orderly and business-like. It has to be remembered, of course, in estimating the meaning of this, that the boys are older than ours—discipline in an English school would be a very different thing if we had only the 5th and 6th forms to deal with—but even so, it is, I think, not without significance.

I attribute it partly to the presence of girls. At these ages girls are more docile, more conscientious, and more anxious to work. Partly also to the presence of women teachers, who bring in gentler manners, and when they are good women—as they notably are—probably win more easily the consideration and good feeling of boys.

Still over and above these things (which do not affect all the schools I saw) I think the facts point to a greater average earnestness and intention to get on, which is the dominant impression left upon one by America in all directions.

Teachers, I think, on the whole take their work more seriously than do ours. No doubt the large proportion of women has much to do with this matter, and of the men few stay in the profession except those who have a real love for the work or who have power enough to rise to the best positions. On the other hand, it has to be said that there are schools which suffer from an incessant change of staff—conditions not being good enough to retain men. Still, in the schools I saw, the spirit and tone of the staff seemed very high. Paradoxical as it may seem, I think the mediocre quality of work has something to do with the general good conduct. An English teacher lives with the fear of an examination in front of him, and often feels that he must get the work into a boy whether the boy will or no. The American, while doing his best to give the boy his chance, sparing no pains to present the work properly to him or to help him over difficulties, does not take the responsibility for him that we try to do. He frankly throws it—where it properly rests—on the boy himself and on his parents. Consequently there is not the frequent pulling up to attention, the constant effort to get work out of the idle and unwilling that there is with us. If the boy won't do his part he is left alone; if he continues unsatisfactory the parent is called in; if there still fails to be improvement, the boy must go, there is practically no punishment short of expulsion. This does not mean that expulsion is common, it is apparently very rare, but it does mean that the schools are worked with singularly little friction and waste effort.

I can illustrate the American attitude best by an extreme case: I watched a teacher taking a class (7th and 8th grades in a grammar school) in singing. She was doing it well and the class were singing nicely, but nearly half sat dumb, and breaking voices did not explain the matter. I asked a teacher standing by if no effort was made to induce them all to sing; "Oh no," she said, "the teacher thinks that if they have not sufficient artistic feeling to wish to sing, it is not her business to make them." This may be all very well in the case of music (*cf.* Wilhelm Meister), but it is not clear that it is

sound, say in drill. We saw grade after grade come out into the hall and do club or bar exercises to music, but the teachers made not the slightest attempt to pull them out of the slack and slovenly manner in which they performed the movements: whether they recognised that the work was poor and didn't see fit to try to drive the children, or whether they simply didn't know themselves the difference between bad work and good, I did not find out; but in either case I cannot think the results satisfactory. The letting a child find out things for himself, the encouraging him and guiding him to help himself, which one finds is most excellent; even when it results in mediocrity, there is something to be said for it; but when it results in contentment with mediocrity, it is fatal.

4. I do not believe that to any notable extent education has been the cause of American industrial success. The great increase of education in America and any progress in quality or adaptation to the needs of the people have been the work of the last fifteen years, and have hardly had time to produce any very general effect. It rather seems to be that the progress of industry has produced a need for men of judgment, insight, and breadth of mind; and that by degrees men of high education have shown themselves valuable, and that therefore the demand for them has steadily grown. This means that education is a secondary cause facilitating progress, but is not itself the real driving power. The extent of the country, its great natural resources, a rapidly increasing but still very thin population, the consequent absence of injurious social restrictions and of any large class of unproductive idlers, have maintained unimpaired the energetic and hopeful spirit of the people. The struggle—hardly yet over—with a wild nature, with wild beasts, and with wilder men, has kept them face to face with the elementary difficulties of life. Work—constant, hard, strenuous work—has been a necessity; but it has been work which has rapidly brought its reward in improving conditions. Hence it has not been the crushing, soul-killing toil that it too often is in our Eastern World. Nothing is more remarkable in the American than his mingled materialism and idealism. Hence he believes in education, both for its own sake—as fulfilling the needs of his higher nature—and for its value as making him a more efficient and productive workman. That this is the true view of the matter is, I think, shown by my fifth conclusion.

5. America does not believe in educational short cuts. We think of Americans—they seem proud to think of themselves—as “hustlers.” In the schools, on the other hand, nothing is more remarkable than the leisureliness and absence of hurry. It is quite true that in New York—perhaps also in other great cities—there are institutions whose aim is to supply technical training of a low grade to young workmen who have only been through the elementary schools—analogous to much of the evening school technical work done in England. But while this is useful, even necessary work, perhaps even more necessary in America than here, owing to the total breakdown of the apprenticeship system, it is important to realise that this is not what America understands by technical education. All the really important technical schools are institutions of college or university rank, and demand a full high school education preparatory to entrance—that is to say, a boy does not ordinarily enter them till he is nineteen. He then takes a three, or probably a four, years' course of study. He may

very likely fill in his vacations with work in shops, with the double purpose of helping to meet his expenses and of widening his experience; but apart from this, his full time till he is twenty-two or twenty-three is given to study pure and simple. Further, in some cases—at Princeton, for instance—engineering is a post-graduate course, and a man is not admitted to it until he has been through the ordinary four years' academic course. He is thus twenty-two or twenty-three before he even begins his technical study, and spends two or more years at this before he goes out into life. It is claimed that these are the men who rise most rapidly, and it was stated to me that these are just the young men whom we are surprised to hear of as being at the head of important departments.

It may safely be stated that technical education in America presupposes at least a complete high school course, and that there is no demand on the part of the technical schools that this high school course should be specialised in a technical direction. It is true that some of the high schools—the manual training high schools—present to the outsider the appearance of being really technical schools of a low grade, but their advocates (justly or unjustly) emphatically disclaim this, asserting that their boys are just as likely to become doctors or business men as mechanics, and that the work they do in wood and metal is done as purely for its intellectual and moral value as are Latin and pure science.

6. Educational progress on a large scale is dependent on public support of all grades of schools. It is the free public high school and the free—or nearly free—State University which have rendered possible the great spread of education. While the enrolment in private schools has barely increased with the population (from 145,000 in 1889-90 to 168,000 in 1901-2) that in public schools has increased two and a-half-fold, viz., from 221,000 to 566,000. To quote Dr. Harris: "The enormous increase of secondary instruction . . . is due to the policy adopted by large villages and counties to provide for free secondary instruction from public taxation. The number of public high schools increased from 2,526 in 1890 to 6,005 in 1900, and 6,292 in 1902." In the case of universities, the increase is due partly to the enormous benefactions made to private corporations—the gifts reported in 1901 and 1902 were 18 millions and 17 millions of dollars—partly to the growth of State-supported institutions.

I visited two of these latter—Kansas and Illinois—and as each presents some features of special interest, and they are less known even by name to Englishmen than the universities of the East, I will dwell a little upon them.

Kansas was settled by New Englanders and Pennsylvanians, who brought with them the characteristic New England belief in learning. "This shall be the site of the university," one of the first settlers is reputed to have said as he outspanned on the top of the little limestone hill where the university now stands. Externally, the university consists of eleven buildings, including a fine library and a museum, and substantial blocks for law, medicine, chemistry, physics, and engineering, besides the central building containing the large hall, offices, and recitation rooms for arts subjects. Internally, it consists of over 1,400 students, including about 70 post graduates, chiefly in arts, and a staff of 90 professors and assistants. In 1889, the preparatory department was dropped, and the work is now entirely college work. An

unusual feature is the weekly gathering for "exercises"—Bible-reading, singing (the hall has a fine organ), and possibly an address. Attendance, of course, is voluntary, but very general—a high tribute to the personal influence of the Chancellor. We chanced to be present at one of these gatherings, and so had the privilege of seeing the whole body of students face to face—as keen and earnest-looking a lot of young men and women as one need wish to see. The buildings are partly the result of benefactions, the current expenses are met by the State. The annual grant has just been raised from 140,000dols. to 200,000dols. This year, for the first time, a small fee has been imposed, with no adverse effect on the enrolment. There are no hostels—students live and board where they please in the town. Many get through on 100dols. a year. A large proportion of them (50 per cent. entirely and 80 per cent. in part, the Chancellor told me) earn their own expenses by working in term or vacation time or both. Evidently, in such circumstances, students come for serious work, not merely to have a good time. That the standard of the staff is high may be gathered—apart from one's personal impressions—by the fact that several have been recently carried off by the new and wealthier Leland Stanford University. It should be noticed that besides the university the State supports a very large normal school, which seems to give a sort of college education to many who cannot afford the university, and a very large agricultural school.

Illinois is an older, more populous, and wealthier State, and its university, while it could not well have a higher spirit, is larger and perhaps further developed. The medical and dental departments (which are self-supporting) are in Chicago, and I did not see them; the rest at Champaign some 130 miles to the south. Beside large and well-equipped buildings for arts, law, natural history, chemistry, library (including a library school), gymnasium, and drill hall, there is a large group of buildings (seven or eight in number) for engineering and another for agriculture. The last biennial grant made by the Legislature was a million and a quarter dollars (including 150,000dols. for buildings and equipment), and went through both Houses without a single dissentient vote.

The agricultural department is especially remarkable. Its strength seems to lie in the fact that it is associated with the Government experimental station, consequently a great amount of research work is going on—work which the farmers have learnt highly to appreciate and to which they seem to give ungrudging support. The different agricultural societies promote bills in the Legislature for grants to the particular department in which they are interested—25,000dols. for soil, 25,000dols. for live stock, 10,000dols. for maize, 10,000dols. for horticulture, 15,000dols. for dairying. The investigation work in each of these departments is carried on under the control of the Director and a small committee of the society interested. The department deals annually with a correspondence of twelve or fourteen thousand letters asking for advice. The result of this is that the farmers, finding this experimental work of extreme value, go further and send their sons to take the agricultural training offered by the university. The growth of the department during the last six years—20, 60, 90, 134, 250, 300—shows eloquently that here, if anywhere, is a university "broad based upon the people's will." About one-third of these students come intending to take the full graduation course (four years), and

these must be high school graduates to start with; others come intending to take short courses only, but as a matter of fact many find the work so beneficial that they change their plans and stay the full time. The staff is very strong—25 men (not all giving their full time), each a specialist in his own subject, who is or has been a farmer himself, “knowing all that the farmers know and more beside.” There is a great demand on the part of large farmers for graduates as managers and confidential advisers, but the bulk of the men prefer to go out and farm for themselves.

The engineering department, which is strongly supported by the Illinois Central Railway, has 800 students. This is the growth of ten years. The equipment looked good, but there is 150,000dols. in hand for its renewal and extension.

The chemical department has 13 instructors besides demonstrators; 60 or 70 students in the special chemical course, besides 300 others taking chemistry as part of a general degree course. The demand for chemists from railways, mines, and the great packing companies far exceeds the supply.

It must not be supposed that the technical side of the university obscures the other. There are over 1,000 students and more than 120 instructors in the non-professional departments.

The whole population of the State is under five millions (two millions in Chicago alone), and there are beside the State University, the great University of Chicago with more than 2,000 students, North-Western University with about 2,000 (including professional schools), Lake Forest College, and a considerable number of others smaller in size and of less high standing.

In estimating the meaning of the benefactions given to universities attention should not be paid simply to the very large sums given by wealthy founders, but also to the smaller but not less significant gifts constantly made by alumni themselves. Most significant of all is the return expected from and made by scholars of the sums given them in their student days. The following appears on a form of application for a scholarship at an Eastern College: “It is hoped that the applicant will consider himself under a moral obligation to return to the college, for the benefit of other needy students, all sums received from scholarships during his college course, as soon after graduating as circumstances may allow.” Whether this is often explicitly stated I do not know, but the spirit here expressed is certainly general.

The Position of Private Schools.

Broadly speaking, there is no room for private schools west of the Alleghanies. The public high school has grown up with the States and supplies all that is needed. Exceptions may be found to some slight extent in denominational schools and in the great cities where there are greater class distinctions, but private schools do not form any important part of the general system. In the East it is otherwise. The early secondary schools were private institutions—in the American sense which, of course, would class our great so-called public schools as private—and in a measure held the field. Here, therefore, the public high school has not developed so easily and has not found as universal acceptance as in the West, and although it is not spreading rapidly the private school still has a place of its own which it is likely to retain. Apart from the

somewhat dubious opportunity it offers to the spirit of social exclusiveness, and the very real advantage it offers to those who for reasons of health or discipline find it necessary or desirable to send their children to boarding school, it has owing to the defects of the public high school certain very solid advantages to offer those who are anxious about the full intellectual development of their children. Obviously people living in a great crowded city will prefer, when they are able to afford it, to send their children to a well-managed school in the country: however good the public schools become they will never meet this want. But there are beside the great boarding schools, expensive day schools in the great cities whose final *raison d'être* is the defects of the public school—large classes and a standard of work unduly lowered by the admission of ill-prepared children. Such schools can impose an entrance examination, can decline to take children who are not likely to stay through the whole course, and so can, if they choose, keep their standard of work higher. The Horace Mann School in New York, for instance, embraces in itself elementary and secondary schools, and declines to accept children who are below the proper standard for their age. It can, therefore, solve completely for itself the difficulty of co-ordination of elementary and secondary work, and is probably able to save at least a year in a boy's school life by so doing. Again a private school can, if it chooses, lay itself out solely for boys who intend to go to college, and having an undivided aim can do its particular work more thoroughly. Lastly, a private school—if it is strong enough—can pay better salaries than the towns are willing to do, and can secure better teaching power. I must not be supposed to be stating that these things are actually done—it is not my business to make such comparisons, nor would it be fair to do so on the scanty evidence before me. I am only pointing out facts inherent in the situation. In America, as in England, there is abundant room for private schools at high fees—little or none at low ones. At present the public high school, attended by rich and poor alike, is the strength and glory of the West. Whether it will ultimately hold its ground entirely is an interesting question; outside large cities it probably will, if it continues to raise its standard of salaries, size of classes, and entrance requirements. As it is obviously a great power working against class distinctions towards a homogeneous national sentiment, it is to be hoped it will do so.

Manual Training in High Schools.

The proper position of manual work in our schools is a problem immediately facing us, and as more has been done in America than among ourselves in the matter I paid special attention to her methods and experience. In general the manual training high school is separated altogether from the ordinary high school. In this case half the school week is given to manual work and drawing in the one school, while in the other there is no manual work at all. The work is then carried on with great elaboration, including not only woodwork, chipping and filing, and forging, but lathe work, casting, and the actual construction of machinery. A school doing this work, of course, needs an expensive equipment—machine tools and an ample installation of power. There is no doubt that very great interest is taken in the work itself, and I was told by fellow Commissioners able to judge that the work turned out was very



A BOYS' PUBLIC SCHOOL WOOD-CARVING CLASS.



good. But the claim is made by enthusiastic supporters of the system that the general effect of this work on a boy's moral and intellectual development is so good—his attention and interest being quickened and his standard of performance so raised by work which itself compels care and accuracy—that he does as much general academic work in his half week as the ordinary high school boy does in his whole week. The claim seems to me extravagant, and certainly in the school where it was made most emphatically I saw some of the worst work in mathematics and language that I saw in the States. A remark of one very thoughtful superintendent of schools seemed to me to have much justice—that the chief justification of the advanced machine work was its effect on the ratepayer who likes to see that he is getting something which he thinks substantial for his money. The only real justification I found for the absolute separation of the two types of school was that often manual work would have had no chance of a fair trial in an ordinary high school where the principal was quite out of sympathy with it. The separation seemed to me on the whole distinctly unfortunate for both schools, robbing boys in the one of all chance of development along lines suitable to them, and leading to an exaggerated stress being put on its value in the other, beside very possibly tending to the development of class distinction between the schools. My own feeling was rather confirmed by what I saw and by the opinions of the more thoughtful men I met, that it is better to have a moderate amount of such work—compulsory perhaps in the lower classes, optional in the higher—in all schools, and to leave work needing elaborate mechanical equipment to professedly technical schools. The present system has had also the effect of stereotyping the work on rather narrow lines, and tending to turn out an excessive proportion of mechanics—especially unfortunate if, as is alleged to be the case, these mechanics have learnt methods which they subsequently have to unlearn.

Co-education.

In the Western States co-education (of boys and girls) is general, both in schools and in universities. In the large cities of the East and in the Eastern colleges and universities it is more rare. In the West the system has grown up from the beginning, and I found very few people indeed who questioned its wisdom and, except at Chicago University, where men and women are now separated during the first two years of the course, heard of no attempt or wish to change it. In the East it was several times said to me that men (and boys) disliked the system, and when they were free to choose would go to a men's college or a boys' school rather than to a co-educational institution. One professor told me that in his opinion it effeminised the men too much—occupations and sports in which women could not join were dropped and men took their exercise in dancing instead of cross-country running. Beyond these I got no tangible objections to the system. Morally, I think my informants without exception held it very beneficial. The Head of a university told me that he noticed that class-mates often subsequently married and that these marriages turned out notably well—men and women getting to know and understand one another thoroughly in the broad intercourse of university life and choosing wisely. I got some further confirmation of this view from old students who had married in this way. One, on the other

hand (a bachelor) told me that they got to know one another too well, that the mystery was too much dissipated, and the attraction to marriage weakened. The two views are not perhaps as inconsistent as they seem at first sight. In the schools the girls are notably more mature than the boys, who seem rather to stand in awe of them, and the sex question is in abeyance—one might compare nature's arrangement to prevent self-fertilisation in flowers where the stamens and pistil develop at different times. There can, I think, be no question that the influence of the girls—more diligent and more careful and conscientious in small matters—on the boys is good: these work better to escape being beaten. Conversely the robust, more vigorous habits of the boys, and probably the better work of the best of them, do good to the girls and keep them from sentimental and fanciful ways and give more solidity and breadth to their work. If both necessarily took the same curriculum there might be the objection that the girls were burdened with unsuitable subjects. The elective system of studies meets this difficulty: some subjects they take easily in common; others, boys or girls as the case may be, rarely take. I saw no ground for thinking that the girls suffered from too much work to as great a degree as it is commonly alleged that they do in our own girls' high schools.

Still, when all is said there remains much doubt in my mind whether in the long run the system is one to be copied. I asked one Superintendent if he had any qualms about it. I thought his answer significant, "If you had asked me that five years ago I should have said 'no' very decidedly. To-day I am not so sure. I can't quite say why, but I find my feeling towards it changing." This was not a solitary case, and I think the objection is likely to grow. I should say that the proved benefits of the system are sufficient to give us confidence in adopting it in sparsely populated neighbourhoods where there are not children enough to support two good schools; but not great enough to cause us to make any effort to overcome the popular objection to it in towns where good separate schools are possible. Quite as valuable, perhaps, as co-education of boys and girls, and more easily and safely adopted, is the mingling of men and women on the staff. The benefits to boys of being partly taught by women and perhaps even more to girls of being taught by men, American experience, I think, shows to be great.

Scholarships.

There is a notable difference between the common method of awarding scholarships in America and our own. The colleges and universities spend large sums in this way, but for the most part scholarships are not awarded by competition, but by careful inquiry into the needs of candidates and inquiry from the schools as to their character and ability. Some colleges allot one or more scholarships to each of the schools which regularly send them boys—or if there are not enough to go round, allot them in rotation—leaving it to the schools themselves to select the holders. Such entrance scholarships are given for a year only, and their continuance depends on the estimate the university itself puts on the holder. Whatever the details of method, scholarships are regarded as assistance given to needy and deserving students, not as prizes for special excellence—still less as a means for raising the standard of work in special subjects. Besides giving assistance by scholarships,

most colleges have funds out of which they make loans at very moderate interest, to be repaid as soon after graduation as possible. The loan was several times made by the heads of universities that no deserving and capable student was ever allowed to miss his chance of college education through financial difficulties.

Miscellanea.

A few special points of minor interest struck me as worth noting.

Americans are notoriously great at labour-saving devices. Consequently one found the larger and newer schools not only well planned but very well equipped—internal telephones, a system of connected clocks in all the rooms, automatically sounding bells, etc. The unfortunate absence of playgrounds is to some extent compensated for by excellent gymnasia—often with shower-baths and dressing-rooms attached. Corridors are wide and there is a good supply of lockers—tall lockers to take coats, properly ventilated and sometimes supplied with hot-air draught. The buildings are always well warmed—too well for English taste—and for the most part well ventilated artificially. Every school has a library, and there is generally a proper allowance for its up-keep and extension. Every room has its large dictionary on a separate stand, and children constantly consult it. Blackboards, maps, and historical charts are amply supplied. Indeed, on buildings and equipment the expenditure is lavish: unfortunately there is too often undue parsimony in the far more important matter of salaries, and the supply of adequately equipped teachers who intend to stick to the profession is very insufficient—classes too are often far too large.

An important point is the universal recognition of the economy of adequate clerical help for the head-master. Nearly always one or more women are engaged who attend to the register, look after late boys, receive visitors, conduct correspondence, etc.—they are generally stenographers and typewriters—thereby saving much of his time and in fact multiplying his efficiency many-fold.

The adaptation of the card catalogue system to keeping the school register is a very valuable economy, enabling the record of any boy, past or present, to be turned up instantly. A notable point is the practice of allowing all teachers a day or a half-day a term, sometimes more, free for visiting other schools; reports have to be made and discussed with the Superintendent of Education. Also it is universally recognised that teachers should not be actually teaching all through the school day; 20 or 22 periods of actual teaching out of 30 seem about the general rule. It is a common thing for a teacher to get leave of absence for a year to go through a further course of college study: often, indeed, teachers will throw up their situations altogether for this purpose, expecting, of course, to get better ones afterwards.

The training of teachers is not, I think, further advanced in America than with us. All the normal schools of every kind put together can hardly turn out a quarter of the annual supply needed for the elementary schools. Secondary teachers are not, in general, trained at all. Departments for the purpose are, however, being developed at some of the universities. I found them at Harvard and Illinois; but at present they are small, and seem mostly attended by those who, having had some experience of teaching, come to equip themselves for better positions—hoping, perhaps, to become principals or superintendents of education.

One point of great importance in the universities should not be overlooked. Professors of technical subjects, engineers, chemists, etc., are by no means debarred from undertaking ordinary professional work. Rather the contrary—a man who is not in demand in the business world is regarded as not likely to be sufficiently strong and up-to-date for teaching. Not only do such men take large retaining fees as consultants, but it is a common thing for them to have leave of absence to carry out important investigations. It is considered, in such a case, that any loss to students consequent on their absence is more than made good by the greater freshness given to their work, and by the fact that in this way the services of first-rate men can be more easily secured.

I must not conclude my report without expressing my thanks to those with whom we came in contact, not only for their extreme courtesy and kindness to us personally, but for the ready and helpful manner in which they met our inquiries, showing us and telling us freely all we wanted to see or to hear, allowing us absolute freedom to go about as and where we pleased—I believe as anxious as we were ourselves that we should arrive at the truth. I cannot hope that there is not much that I have misunderstood, certainly there must be many things whose relative importance I have mistaken. The time allowed us was all too short really to get to the bottom of things which probably even those most familiar with them do not fully understand. Fellow Commissioners and I often felt that we needed to go on a similar tour of inquiry in our own country. In a country so vast and so varied as the States, generalisation is particularly dangerous. I particularly hope that any criticisms I have made will not be thought ungracious. Our own educational system is at present unsatisfactory, but we can all the less afford to bow down and admire any other system in a wholly uncritical spirit. From all my American fellow-workers I had not only extreme kindness, but much personal help and inspiration. The more I saw of their work, the more I felt that our difficulties are essentially the same, our shortcomings and failures much alike—any criticism I have passed only amounts to a recognition that they no more than we have attained perfection.

W. C. FLETCHER.

Mosely Educational Commission.

Report of W. H. GASKELL, M.D., LL.D., F.R.S., Fellow
of Trinity Hall, Cambridge.

THE TEACHING OF PHYSIOLOGY AND ANATOMY IN AMERICAN UNIVERSITIES.

In many respects the methods of education in the scientific medical studies in vogue in the United States and Canada differ from those current in England. There is at present a feeling of unrest and uncertainty about the best method of instruction. Everywhere I was told that the present time is a period of transition: that a new scheme of instruction was being tried, but it was difficult to say at present what its results would be. American ideas and methods of instruction have largely been taken from the German universities, largely from the Scotch; now the desire has arisen to work out their own salvation, to start, if possible, some method of instruction that shall be neither German, Scotch, nor English, but American. Each school, therefore, is working on its own lines, so that the relative importance attached to lectures, recitations, and practical work differs markedly in different places; while, on the other hand, in certain broad aspects all the schools are alike. I do not propose in this report to discuss in detail the amount and nature of the work demanded of the medical student in every one of the medical schools visited, as that would necessitate a considerable amount of repetition, and also would not be in accordance with the object of this report. As I understand it, this Commission was not appointed for the purpose of comparing and criticising the methods of education in the different educational centres in the States, but in order to point out the differences between their methods and those followed in England, and especially to bring out any new experiments in educational methods characteristic of the United States.

However great may be the difference in teaching methods in different places, in one respect they are all alike both in the States and in Canada, and in that respect they form a marked contrast to our English method. In no case are there outside examiners. The question whether or no a student can pass in any subject is decided by his teachers alone, and is decided not only by a separate examination but also by the nature of the work done by the student throughout the term. For this reason, then, every inducement is given to the student to attend regularly and carefully to his practical and lecture work.

Every student belongs to a certain year and moves with the rest of his class from freshman to sophomore, sophomore to junior, and junior to senior. It is considered a disgrace to be obliged to take the work of the year below your proper standing. The work for each year is settled by the teachers of the faculty and the university authorities, and in most cases is extremely rigid; each year there is an examination in the subjects for that year, which takes place immediately upon the termination of each course of instruction;

the results of this examination, together with the marks obtained during the course, determine whether the student has passed or failed in that subject; if he has failed in only one or two subjects he has a chance of making good those failures by working in the summer and passing a supplementary examination in September. If he fails in many subjects he loses his year and has to take all the year's work over again; or he may be advised to try somewhere else where it is easier to get a degree. Each course is got rid of entirely as soon as it is finished, and the student can dismiss it from his mind as far as examination is concerned. I think, speaking generally, it may be said that the knowledge of each subject is tested during and immediately at the close of the instruction in that subject without regard to any other subject.

Further, a subject is much more split up into sub-divisions than with us. Thus it is almost universal to find under the term physiology, as understood in England, three separate laboratories with separate professors and staff of teachers in each, viz., histology (usually combined with embryology), physiological chemistry, and physiology proper. Each of these subjects forms a separate course with a separate examination.

Method of Teaching.—In all the medical schools of the United States the teaching in any subject is carried on by means of lectures, conferences, recitations (catechetical classes), and laboratory work; to which must be added in some cases seminars. Among these methods the greatest stress appeared to me to be laid on the recitations and on the laboratory work. In many cases didactic lectures were looked upon as nearly valueless, on the ground that they were only a repetition of what was already in the text-book, and were not, therefore, needed. In other cases, as at Harvard, the standpoint was taken that all learning comes best by observation and direct experimentation, and that the principles of the subject are best brought out by the Socratic method of question and answer between the teacher and the student, the foundation of the teaching being based upon the repetition by the student of all the possible fundamental experiments upon which modern physiology is based. Each day's work is followed by a discussion between a teacher and a section of the class of the principles elucidated by the experiment—what further knowledge it has led to, what are its limitations, etc.—a method of catechetical instruction which has for its object not to cram the men for examination purposes but to make them think out for themselves the principles which each piece of practical work elucidates, and its bearing on the science of physiology. Didactic lectures are given on those parts of the subject which cannot be treated by the student in the laboratory, and as far as possible are illustrated by demonstration given during the lecture.

The idea underlying the whole system of instruction in these scientific subjects is that they are subjects based on experimental research, that the question which the student ought to be taught to ask from the very first is not, What man is the authority for such and such a statement? but, What is the experimental evidence which proves the truth of the statement? Therefore, in every way the student is taught to consider that he himself is undertaking a research, that he is rediscovering for himself what others have found out before him. In accordance with this view no slovenly work is allowed: every experiment must be done as though it was

an actual research, time markers, stimulation markers, being used, with the result, so I am assured, that in a very short time it becomes a habit in each man to perform every experiment with real care and thoroughness. Such a method of instruction necessarily means a large amount of time given to the subject and a considerable staff of efficient teachers to supervise the practical work and conduct the recitations, for the latter in order to be of real good must not be given to too large a class. These results are obtained at Harvard by the system of concentration, the theory being that when you are conducting a research you want to fill your whole mind with that subject and devote your whole time to it. When then, for instance, the student is finding out the fundamental facts of physiology, the only other subject he is allowed to take at the same time is physiological chemistry, so that the whole of his morning is taken up with physiology and the whole of the afternoon with physiological chemistry. These two courses last for four months, from February 3rd to May 31st, and the scheme of instruction is given in the accompanying schedule. The period in question is the second half of the first year of medical study, the first half having been occupied by a similar study of anatomical subjects, viz., histology and embryology and anatomy as in the schedule. (See pp. 150-151.)

The amount of time given by the Harvard student to histology, physiology, and physiological chemistry amounts to 888 hours, of which experimental physiology obtains 323 hours, practical physiological chemistry 240 hours, and practical histology 212 hours, a very much longer time than is given in any English school to the same subjects to the whole of the students. Further, as is seen in the schedule, the student is continually being tested by written papers, which are looked over by the instructors and form part of the whole examination system.

Another very important feature of the Harvard system, upon which great stress is laid, consists in the preparation by the students of theses, which are read at fixed times and discussed in the class by the students and teachers. A number of subjects are chosen beforehand for such theses, and the literature on these subjects is tabulated by the professor and his assistants. To every member of the class (as many as 120) one of these subjects is allotted for his thesis, and he is supposed to read the scheduled literature in the original languages and write a critical essay on those papers. Of the whole 120 theses thus prepared, 50 are selected for public discussion, and the rest are read but not discussed. In addition, each student is expected to prepare himself in two of the theses selected for discussion, so as to be qualified to take part in such discussion. He also has to prepare a bibliographical list of the literature on some other subject. The selection of the 50 students whose theses are to be read and discussed mainly depends on the reports of the teachers in the previous half-year, i.e., the teachers in anatomy and histology; those who have done best in those subjects being selected. It was unfortunate that the time of year when the Commission was in America was too early for us to be present at the reading and discussion of any of these theses, as they do not begin until March. I am, however, assured that they have been a great success, and the men themselves are very keen about them, so keen, indeed, that two or three of them will club together to pay another student to translate the

TABULAR VIEW OF UNDERGRADUATE COURSES, HARVARD.

FIRST YEAR—First Half-Year.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
9-10	Anatomy. L. Room C. <i>October, January.</i> Section I., Dissection. Rooms D and F. Section II., Histology. Lab. Room G.		Anatomy. L. Room C.	Anatomy. L. Room C. <i>October, January.</i> Section I., Dissection. Rooms D and F. Section II., Histology. Lab. Room G.		Anatomy. L. Room C.
10-1	Section I., Anatomy. Dissection. Rooms D and F. Anatomy. 1st and 3rd weeks. Section I., Rooms D and F. Anatomy. 2nd and 4th weeks. Section I., Room G. Section II., Rooms D and F.		<i>October, November, December.</i> Section II., Histology. Laboratory. Room G. <i>January.</i>			<i>January.</i> Anatomy. L. Room C. <i>Oct., Nov., Dec.</i> 11 A.M. Histology. L. Room C.
2-3	Histology. L. Room G. <i>October, January.</i> Section I., Histology. Lab. Room G. Section II., Anatomy. Lab. Rooms D and F.		Histology. L. Room G.	Histology. L. Room C. <i>October, January.</i> Section I., Histology. Lab. Room G. Section II., Anatomy. Lab. Rooms D and F.		
3-6	Section I., Histology. Lab. Room G. Anatomy. 1st and 3rd weeks. Section I., Room G. Section II., Rooms D and F. Anatomy. 2nd and 4th weeks. Section I., Rooms D and F. Section II., Room G.		<i>October, November, December.</i> Section II., Anatomy. Dissection. Rooms D and F. <i>January.</i>			

Second Half-Year.

PHYSIOLOGY. FEBRUARY 1 TO MARCH 5.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
9-9-30	Conference. Room A.		Conference. Room A.			
9-30-9-50	Written Test. Rooms B and H.		Written Test. Rooms B and H.			
9-50-12	Laboratory Experiments. Rooms B and H.					
	Recitation. In Sections. Rooms B and H.		Laboratory Experiments. Rooms B and H.			
12-1					10-11	Recitation. Room A.
					11-12	Demonstration. Room A.

MARCH 7 TO MAY 21.

9-9-30	Lecture. Room A.		Lecture. Room A.			
9-30-10	Conference. Room A.		Conference. Room A.		9-9-45	Discussion of Theses. Room A.
10-10-20	Written Test. Rooms B and H.		Written Test. Rooms B and H.			
10-20-12-15	Laboratory Experiments. Rooms B and H.		Laboratory Experiments. Rooms B and H.		10-11	Recitation. Room A.
12-15-1	Recitation. In Sections. Rooms B and H.		Discussion of Theses. Room A.		11-12	Demonstration. Room A.

MAY 23 TO MAY 31.

Laboratory Experiments, Rooms B and H.

PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY.

First eight weeks.

Second eight weeks.

2-2-30	Lecture. Daily.	Room A.	2-3	Lecture. Monday, Tuesday, Thursday, and Friday. Room A.
2-30-5-30	Laboratory. Daily.	Room I.	3-5-30	Laboratory. Wednesday. Laboratory. Daily except Saturday.

original French and German papers, if they themselves are unable to read them. The teachers themselves take part in the discussion, and often obtain new suggestions and original ideas in the course of the discussion; so much is this the case that again and again a student has been set on to a piece of original work which has arisen out of his own thesis, and has been encouraged to do this work during the time of his student career.

To all intents and purposes this system of reading theses is an attempt to include the system of teaching by seminars, as they are called, in the teaching of an elementary class. In all advanced work, in all the graduate schools for the degree of Ph.D. and M.A., the seminar system is the principal method of teaching. Such classes are always very small, so that every one in the class is encouraged to take part in the discussion, the subject of which is settled beforehand. In the seminar the teacher frequently opens the discussion himself, but every now and then one or other of the class is requested to get the subject up and discourse upon it. Thus at Johns Hopkins in the post-graduate school of the zoological department each man is expected to take up a particular subject, for instance, a particular portion of Korschelt and Heider's embryology, and treat it thoroughly in a lecture to the rest, which is criticised and discussed. In this way most of the invertebrate series is gone through. In my opinion, this seminar system, upon which the teachers in America lay great stress, is a very valuable one and worthy of greater extension in England; it is founded on the belief that the best way of learning is to teach, and that knowledge so acquired is much more lasting than that gained either by book reading or listening to lectures. Whether, however, such a system can with advantage be applied to a large elementary class is, to my mind, very doubtful, and that seemed to be largely the opinion in the States and in Canada, in both of which countries as well as here in England the working of the Harvard experiment was being watched with great interest. On the other hand, it must always be remembered that experiments of this kind may be a success at Harvard and Johns Hopkins universities without being advisable in other places, for it must never be forgotten that the students of these two places start their medical course with the enormous advantage of having already passed through the whole of the academic course in some university or other, so that they are not only older than the majority of students entering the medical schools in other places, but also much better trained how to think and how to work. They are, in fact, in the same position as the students of the graduate schools, except that their subjects are new to them. It is not, therefore, so impossible in these circumstances to conceive of the successful working of the Harvard system, as it would be in an ordinary London medical school. Then also it must be remembered that from his earliest youth the American boy has been taught how to express himself in public, has been encouraged by the system of recitations to be able at any moment to stand upon his feet and argue out a question; to take part in a discussion with his teachers becomes natural to him, so that a system such as the seminar, which might be difficult to work in England owing to the reticence and shyness often found in the English student, is easily and successfully worked in America.

As may be imagined, the work entailed upon the teachers during these four months is something enormous, but at the same time

every student becomes perfectly well known to the instructor, and a fair estimate is made of his capacity and industry before the examination begins. To my mind, two of the most striking points about the laboratory instruction of all kinds in the States is the energy and activity displayed by the teachers, their earnest endeavour to do their utmost without sparing themselves, and the determination of the students to be taught. I do not think it is only because the practical work counts in their final examination that the men attend and work steadily, but because they want to get their money's worth; they have come to the university to be educated for the medical profession, and the stimulus of want of means spurs on a large number, with the net result that the class as a whole attends well, works well, and in consequence soon becomes thoroughly interested in what must interest everyone—the discoveries of science. This system of concentration can only be carried out efficiently when the whole of the instruction has been planned out carefully beforehand and every detail of the daily working thought out and provided for in advance; this is done at Harvard by providing for every pair of students a complete set of all the apparatus that can possibly be needed for the carrying out of the course of experiments. The whole of this apparatus is made in the workshop of the laboratory by a skilled mechanic, and has been devised by Professor Porter with an especial desire to combine efficiency with cheapness.

In all American laboratories, laboratory servants are very scarce, so that in every possible way labour saving appliances are used; at the end of each experiment the students have to put away their apparatus, clean up their places, and leave everything ready for the next day, so that it is absolutely necessary that each man should be provided at the beginning of the course with all that he can possibly require.

This deficiency of laboratory servants is not altogether an unmixed evil, for it has contributed to force the teachers so to arrange their laboratory work that each student should have his own place and his own set of material during the whole of the time of his attendance at that particular course. In some cases, as in experimental physiology, he shares his place with another student, because in such courses it is better for two students to work together than for each to work by himself. In addition to the times of the regular course, he can come when he has free time, and do what he likes in his own place; he has, in fact, the same privileges and facilities as in England are confined to the advanced students. So, too, from the point of view of the teachers, not only can a piece of work be continued from day to day, but the questions which can be set in the practical examinations are no longer determined by a time limit, but may take many days to answer; thus at Johns Hopkins it is customary to expect quantitative as well as qualitative work in physiological chemistry, and the last week of the course is given up to the working out of such problems by the student, and constitutes part of the examination.

In very many laboratories it was not possible to give a separate place to every student at the same time, or else the staff of teachers was too small, and it was felt that the teaching would be more efficient with a smaller number. In such cases the class is divided into sections, usually two or three, and the sections are, in many cases, so dove-tailed in with other sections that during the whole

time each section is at work the working places belong absolutely to the members of that section. With two sections, for instance, an alternation takes place between physiology and physiological chemistry; with three sections and three terms, between physiology, physiological chemistry and histology, or pharmacology, or bacteriology. This system, which is advantageous to the student, necessitates on the part of the teacher the repetition either once or twice of every course, and also implies that it is a matter of indifference to the student in what order these various subjects are taken. It is possible, by this system of sections, to grade the students, with the result that the section consisting of the better students would be expected to get through more work than the other sections, and I believe that such grading is attempted at Cornell University.

If it were possible to differentiate the students at the outset it would largely do away with what, to my mind, is the weakness of the American system—viz., that the democratic idea assumes an equality in the students, and, therefore, the same instruction is given to all—the same lectures, the same recitations, the same laboratory work. All are supposed to go the same pace, which cannot, therefore, be the pace of the quickest, so that, although the system may mean, and I believe does result in, a levelling up of the lowest class, it must at the same time mean a levelling down of the highest class.

In addition to the set courses of instruction, in all the schools more advanced courses are given, belonging to the system of electives, and consisting either of special courses given by teachers who have made some particular part of the subject their own speciality, or of seminars, or of some piece of research work given to the student. This elective system is in considerable favour, but is at present on its trial, and thus varies in various universities.

At the Harvard Medical School a new experiment has just been instituted with respect to the medical curriculum in the fourth year. The object of this experiment is to enable those students who are desirous of becoming specialists or teachers in any department of medicine, and do not intend to practice medicine, to spend their last year in elective courses, and still to obtain the degree of M.D. The new course of study is so arranged that the first three years are devoted to prescribed work, and the fourth year entirely to elective courses. These elective courses consist of advanced teaching in the various departments of medical study, and as far as anatomy and physiology are concerned are divided under the headings anatomy, histology, histology of the nervous system, embryology, physiology, physiological chemistry. Of the whole group of electives the student must take at least two of the subjects and must obtain credit for at least 1,000 hours of work during the year. The student is intended in these elective courses to carry out if possible some original research.

Such an experiment is possible in the States, because the degree of M.D. does not in itself give the right to practise medicine; that is given only by the passing of the State examination. It is an attempt to enable a man who desires to become a teacher in some special scientific subject connected with medicine to obtain some knowledge of medicine and the nature of the medical curriculum, and at the same time to make himself more efficient in the subject he intends to teach. In the States even more than in Great Britain

it would be impossible to obtain a professorship in such subjects as anatomy and physiology without a medical degree, while at the same time this very experiment indicates a desire to shorten the time spent in the hospitals for students who intend to take up such a teaching career. How the experiment will turn out it is impossible at present to say, as the new elective curriculum of the fourth year only begins in the autumn of 1905.

The courses of instruction in most of the universities last from the beginning of October to the end of May, with a slight recess at Christmas and Easter, and the year is divided either into three terms of about nine weeks each or into two semesters, the four months of June, July, August, and September being free from official work except for the examinations in September. Chicago University has started an innovation which is at present in the experimental stage but is considered so far to be a great success. The instruction given is on the quarter system, the whole year being divided into autumn, winter, spring, and summer quarters. Each is about twelve weeks in length, and there is a recess of one week between the end of each quarter and the beginning of the next following, except that there is no interval between the end of the spring and the beginning of the summer quarter, and there is a recess of one month at the close of the summer quarter. All of these quarters are available to the student for obtaining credit, but in each year he can only obtain credit during three quarters, that is to say, he will be credited for a year's work in the medical school whether he attend three or four quarters of the year. The student can enter at the beginning of any one quarter, and the courses of instruction are repeated where necessary for the convenience of such a system. The staff of teachers is sufficiently large to prevent the necessity of any teacher being on duty during the whole four quarters.

Thus in the department of physiology, including physiological chemistry and pharmacology, the staff consists of one professor, one assistant professor of physiological chemistry, one assistant professor of physiology, and nine instructors, associates, and assistants, making a total of twelve teachers. In addition there is a separate department with a separate laboratory for neurology, the staff consisting of one professor, four assistants, and one fellow, making a total of six. In the department of anatomy, including histology, the staff consists of one professor, and one assistant professor (histology), nine assistants, and two fellows, making a total of thirteen. In the department of zoology, including embryology, the staff consists of one professor and one associate professor, one associate professor of embryology, seven assistants, and five fellows, making a total of fifteen.

It is intended and hoped that this summer quarter will be an inducement for teachers from other parts of America, and even from Europe, to come to Chicago and take part in the teaching. I understand that funds are available for such a purpose, and that one of the purposes of the summer quarter is this infusion of foreign ideas and foreign teaching methods into the home circle.

At Harvard, as already mentioned, the student in his first year of medical study begins with anatomy and physiology, because, according to the regulations of the University, he must have taken a B.A. degree before he enters the medical school, and for that degree he must have obtained credit for chemistry and physics; otherwise

he must pass a preliminary examination in these subjects before he can enter the medical school. As a rule, also, he chooses comparative anatomy subjects for his B.A. degree if he intends afterwards to enter the medical school. The only other university in America, as far as I know, where a B.A. degree is essential before beginning medical study, is Johns Hopkins. Here, too, the preliminary subjects of chemistry, physics, and biology are cleared out of the way before the beginning of the four years' course of medical study. At Johns Hopkins the plan pursued in the teaching of physiology differs from that of Harvard in that some physiology is taken during the time of teaching histology and anatomy. During this period no practical work is given, but there is a course of lectures, elementary in character, which deals with physiology as a whole, and is intended to aid the student in his anatomical work by giving him elementary notions of the functions of the organs and tissues he is examining. At the same time he obtains a general idea of the subject as a whole, preparatory to the more detailed investigation which is presented to him in the laboratory in the following year.

It is clear that a four years' course of medical study in these two universities which does not include chemistry, etc., is not the same as a four years' course in other places where chemistry is included, and in consequence a considerable portion of the first year is taken up in the study of that subject. On the other hand with the academic course requiring four or three years and the medical course a further four years, it is probably eight years before the student obtains his M.D. degree, which means if he enters college at 18 years of age that he is 26 years old before he gets his degree. The length of time required to obtain both degrees is recognised as a drawback, while at the same time the great advantage of a collegiate course is universally acknowledged, so that the tendency, to my mind, in the States will be more and more to institute a combined course of six years in length, which will enable the student to obtain his academical degree at the end of four years and his medical at the end of six—to imitate, in fact, the system in vogue in England and in Canada. This system is already in working order in the more Western universities—Chicago, Minneapolis, and Ann Arbor, and it is of interest to give the details of it in these three places as far as concerns the first four years of the conjoint course. As will be seen, this means that the teaching of human anatomy and physiology is included in the scientific subjects for the scientific degree; in consequence we find that the laboratories for these subjects are built in close connection with those for the other scientific subjects, and not, as in most of the Eastern States, in the midst of the town near the hospital, but far removed from the scientific buildings of the university. In this tendency of the universities of the Middle West not to divorce physiology and human anatomy from a list of subjects belonging to a science school and confine them entirely to medicine, there is, to my mind, one of the most hopeful signs for biological progress in the States.

The divorce of the medical and scientific schools, combined with the method of teaching mainly by recitation and practical work, tends to the accumulation of detail in the mind of the student, at the expense of a broad-minded, comprehensive view of the subject as a whole, and in relation to cognate subjects. What is wanted in

the present day more than anything else is to bring cognate subjects together as much as possible for the benefit both of the teacher and the student. Such a subject as physiology especially ought never to be taught or studied except in close proximity to the laboratory buildings of chemistry, physics, and anatomy, both human and comparative. All the problems of physiology fall under one of these three heads, and where there is easy intercourse between the teachers and thinkers in these various subjects, there will be found the broadest views and the most efficient teaching power. When the scientific buildings of the university are situated many miles away from the medical school, and in the latter alone is provision made for teaching physiology and human anatomy, then such intercourse is very much hindered to the detriment of both schools. I hope sincerely that in the new arrangements for the London University the proposal to concentrate all the preliminary medical subjects, even up to bacteriology, into one or more scientific schools apart from the hospitals, will be carried out.

In Ann Arbor the student can take physics, chemistry, and biology in his first year, and afterwards take all the preliminary medical subjects up to anatomy and physiology in the next three years, and obtain a degree in the department of arts, literature, and science, the only obligation being two courses in English during his first year.

In Minneapolis the University of Minnesota is offering this year a six years' course to give the degrees of B.A. and M.D. at the end of four and six years respectively. The outline of this course is as follows :—

First Year.—Rhetoric (two hours each week throughout the year), German (four hours), botany (four hours), chemistry (four hours), zoology (four hours), plane trigonometry (four hours each week for twelve weeks of second semester).

Second Year.—Rhetoric (two hours), German (four hours), chemistry (four hours), comparative anatomy of vertebrates (four hours), physics (four hours).

Third Year.—Human anatomy, histology and embryology, medical chemistry, physiology, materia medica.

Fourth Year.—Human anatomy, histology and embryology, medical chemistry, physiology, therapeutics, bacteriology, and general pathology.

In the University of Chicago the courses for the first two years which are recommended for students preparing to study medicine so as to obtain the degrees of S.B. and M.D. in four and six years respectively are as follow: English, three majors; French or German, three majors; mathematics, two majors; history, two majors; philosophy, one major; these subjects are required for the S.B. degree. Also general biology, one major; physics, two or three majors; chemistry, three to six majors; general chemistry, qualitative analysis, organic chemistry, comparative anatomy, one or two majors. These 18 to 24 majors will require six to eight quarters for completion. The history and philosophy, or part of the chemistry, may be taken during the time that the student is doing his first two years' work in medicine. A major is a course of instruction that meets daily (*i.e.*, four or five days a week) throughout the quarter, two hours of laboratory work being considered equivalent to one hour of lecture or recitation. In the next two years the first two years of the medical course are taken.

At Toronto a new science course entitled the honour department of biological and physical sciences, leading to the degree of B.A. at the end of four years, has been instituted, so that at the completion of the fourth year in the arts course the student has already fulfilled the requirements of the first two years in medicine. The regulations for this course are as follow:—

First Year.—Elementary biology with laboratory work; elementary physics (mechanics, hydrostatics, and heat), with laboratory work; elementary chemistry, with laboratory work; elementary geology. Also Latin, English, mathematics.

Second Year.—Zoology of invertebrata, with laboratory work; physical chemistry; quantitative and qualitative analyses; physics, with laboratory work; elementary physiology. Also English, psychology.

Third Year.—Vertebrate zoology with laboratory work; elementary anatomy; cytology and histology; organic chemistry with laboratory work; advanced laboratory course in electricity and magnetism. Also English.

Fourth Year.—Embryology of vertebrates, general biology (including history of biology), bacteriology, physiology, physiological chemistry, advanced anatomy; also English.

At the first, second, third, and fourth year examinations the candidate will be required to translate at sight portions of scientific works in French and German.

At McGill University, Montreal, the regulations for the combined course giving the degrees of B.A. and M.D. are as follow:—

First Year.—Greek or Latin, English, history, mathematics, physics, French or German.

Second Year.—English, Latin or Greek, and any three of the following, of which (*d*), (*e*), or (*g*) must be one: (*c*) Greek or Latin, or a modern language; (*d*) mathematics, including dynamics or elementary biology; (*e*) chemistry, with laboratory work; (*f*) logic and psychology; (*g*) Hebrew; (*h*) German or French. The work in elementary biology and chemistry exempts from the subjects of chemistry and physics and biology in the first year of the faculty of medicine.

Third Year.—(*a*) Anatomy and practical anatomy, histology, and physiology of first year medicine; (*b*) either one or two of the courses which are not placed under the heading science in the arts curriculum; (*c*) either one of two hours weekly in English composition.

Fourth Year.—(*a*) Anatomy and practical anatomy, histology, physiology, and chemistry of second year medicine; (*b*) one of the courses which are not placed under the heading science, if only one has been taken in the third year; (*c*) one hour weekly in English composition, if only one has been taken in the third year.

The courses which are not placed under the heading science in the arts curriculum for the third and fourth years are English, Latin, Greek, Sanskrit, French, German, Italian, Semitic languages, comparative philology, history, logic and metaphysics, moral philosophy, political science, economics, Roman law, constitutional law and history, art and archæology, history of philosophy.

Teaching Appliances.—Naturally the greater number of subdivisions of the preliminary medical scientific subjects universally

found in America than is the case in Great Britain necessitates a greater number of well-equipped laboratories and a greater staff of teachers. With respect to the first item, the building of laboratories, the activity going on in the States makes one ashamed of one's own country. Everywhere one has the feeling that the whole country is so impressed with the desire for the best educational methods that whenever new buildings are required the money is forthcoming for their erection. Either it is given by a munificent donor, or is left by will, or is obtained from the past alumni and the general public by the exertions of the President. In the State universities matters may move a bit more slowly, but here, too, new buildings arise with considerable rapidity at the demand of the faculty. It is impossible to enumerate all the rooms for students and research in the different departments of all the universities visited; it is sufficient to say that at Harvard and at Philadelphia University it was felt that the laboratories for the preliminary scientific medical subjects were not quite up-to-date, and in consequence in both places palatial buildings are arising for the teaching of physiology, pathology, etc. The building at Philadelphia, which is nearly completed, will be, I should think, the finest in the world, unless the Harvard building beats it. At Chicago also there is practically unlimited space for buildings, and also an unlimited purse.

All the laboratories are fitted with electric light and with electric power and complete telephone arrangements, so that every department can communicate with every other, as well as with the world at large. Many of the laboratories have their own stenographer and their own mechanician. As to the arrangement of the rooms, there are always certain rooms for research work, and for advanced work, in some cases such provision is ample, in others somewhat scanty. The class-rooms are, in most cases, composed of a single large room fitted up to accommodate as many students as possible in any particular subject. In some cases the laboratory unit system has been introduced and has given great satisfaction. The essence of this system is the limitation of the size of each room in which practical work is done. Instead of one large room holding places for 70 or 80 students, there are a number of small ones, each with places for 25 students; each room has its own demonstrator, and every student has his place during the course. The new laboratory for physiology and pathology at Toronto is built on this plan, and impressed me very much. The dissecting room at Johns Hopkins is also divided in the same way, so that each room contains three bodies, and as there are seven students to a body there are 21 students in the room under the charge of a demonstrator.

A dissecting room under these circumstances does not give the usual feeling of being overcrowded. There is an air of seclusion and quiet work such as one is accustomed to associate with a class of advanced students in English laboratories but not with a large elementary class. I am inclined to think that one of the most important lessons we can learn from Canada and the United States is how to treat a large elementary class as though its members belonged to a small select one. In order to carry out any such plan successfully we must not only have the right kind of laboratories, but also a sufficient number of efficient teachers; each unit of the laboratory must have its own demonstrator, while the professor supervises and superintends the whole laboratory.

At Harvard in the department of anatomy the staff consists of one professor, one demonstrator, one instructor, and ten assistants; in the department of histology and embryology one professor, two instructors, and two assistants; in the department of physiology one professor, one associate professor, one assistant professor, and one instructor; in the department of physiological chemistry one professor, one associate professor, two instructors, and two assistants. The number of the class in each year varies from 120 to 130. The scale of payment of the teachers in the States varies considerably, being greater in the endowed universities than in the State universities, so that no definite statement can be made. The highest salary for a professor is £1,500 a year, the more usual one £1,000 or £800 a year. The associate professors get up to £700 a year, and the assistants, etc., begin at £100, and may rise to £500 or £600. In addition, there are often student instructors at from £20 to £50 a year.

At Johns Hopkins in addition to the separate small dissecting rooms there was another larger room in which were placed a great number of sections through the body at different levels. These sections could all be handled by the students, examined and discussed as thoroughly as possible, and whenever required were replaced by a fresh set. Perhaps what impresses one most (especially if one belongs to Cambridge) in passing through the dissecting rooms in the States is the lavish display of material. Nowhere in the States did I find more than eight men to a body, usually only six or seven. The parts were cheap, one to one and a-half dollars a part, and sets of bones were lent to each student during his dissecting course. The remains are either burnt or buried. According to the State regulations every unclaimed corpse goes by right to the dissecting rooms, the number to each school in any large town being regulated in accordance with the size of the school. Many of the anatomical schools have a large plant for cold storage, others prefer other methods of preservation.

In connection with anatomy, as already mentioned, there are fully-equipped separate laboratories for histology and embryology, but in no medical school is there any arrangement for comparative anatomy. In fact, except in the cases where the B.A. degree is compulsory before commencing medical study and in those universities where a conjoint course for B.A. and M.D. is offered, the study of comparative anatomy as a preliminary to the medical courses is not insisted upon. Chemistry is the only preliminary scientific subject which is essential; biology is a desideratum, but not a requirement. For all those who do take the collegiate course in arts and sciences the provision for teaching comparative anatomy and morphology was in most cases excellent; plenty of laboratory space, enthusiastic teachers, and well supplied museums were the rule.

In another respect also the student of medicine who takes both degrees has an opportunity of studying a subject cognate to medicine in a much more thorough manner than is afforded him in the medical curriculum, for psychology in the States is invariably associated with the department of philosophy, and, consequently, the laboratories for experimental psychology are situated in the academic buildings of the university, removed, therefore, in many cases miles away from the physiological laboratory. These laboratories, and indeed the whole provision made for teaching experimental

psychology in the States, are on a scale the magnitude of which is astonishing to anyone coming from England and knowing how neglected this subject is in almost every English school. The number of students attending these psychological classes was as a rule very large, and was largely composed not of men intending to follow medicine as a profession but of those whose future career was to be that of a teacher in either school or college. Certainly I think that the want of provision for the teaching of experimental psychology in England ought to be remedied as soon as possible.

Conclusions.—As the result of my investigation into the teaching of anatomy and physiology in America, I would like to make the following suggestions:—

1. In our medical and scientific schools separate laboratories with a separate staff of teachers ought to be provided for anatomy, histology, physiology, physiological chemistry, experimental psychology, and perhaps neurology; such laboratories should be arranged on the laboratory unit plan and fitted up throughout with electric light, electric power, and telephones.

2. In cases where there is not sufficient accommodation for the whole class at once, the class should be divided into sections and the teaching so arranged that every student has his place to himself during the whole of that course.

3. I would not advocate the extreme concentration method of learning a subject, but would rather spread such a subject as physiology (in the English sense) over two years. In the first year I would give a general course in which the subject should be treated as a whole in an elementary way, taking, therefore, together the histological, chemical, and physiological aspects of the subject, so as to give the student a good general view of the subject, and leaving the more detailed study to separate courses in the second year in the separate laboratories of histology, physiological chemistry, and physiology.

4. I am inclined to think that histology should not be connected with embryology and put into the department of anatomy, but the laboratories of histology and physiological chemistry should be under the control of the professor of physiology, the head of each department being an assistant professor.

5. I am not convinced that didactic lectures are in large measure a mistake and that recitations should largely take their place. I think, however, that the system of seminars should be encouraged as much as possible.

6. A six or seven years' conjoint course for the academic and medical degree should be encouraged as much as possible, and in all universities the preliminary medical scientific subjects should be included among the subjects for the degree in arts or sciences.

7. There is much to be said in favour of taking into account the work done by the student during the term in his examination. There are, however, so many difficulties in the way owing to our system of examination that it does not seem advisable to lay much stress on this point.

W. H. GASKELL.

Mosely Educational Commission.

Report of the Rev. HERBERT BRANSTON GRAY, D.D.,
Warden and Head-Master of Bradfield College, Berks.

[The following places and institutions in the United States and Canada were visited by the writer: At New York—Columbia University, elementary schools, grammar schools, secondary (high) schools, manual training schools, and technical institutions; at West Point—Military School; at Washington—elementary schools, secondary schools, and manual training schools; at Philadelphia—Pennsylvania State University and secondary schools; at New-haven (Con.)—Yale University; at Boston—Harvard University, elementary schools, secondary schools, manual training schools, and Institute of Technology, engineering works, art schools, and evening schools; at Buffalo—secondary schools; at Ann Arbor—Michigan State University; at Chicago—Chicago University, North-Western University, and secondary schools; at Toronto—Toronto University, Upper Canada College, secondary schools, manual training school, and girls' school; at Ottawa—timber cutting works; and at Montreal—McGill University, secondary schools, and manual training schools.]

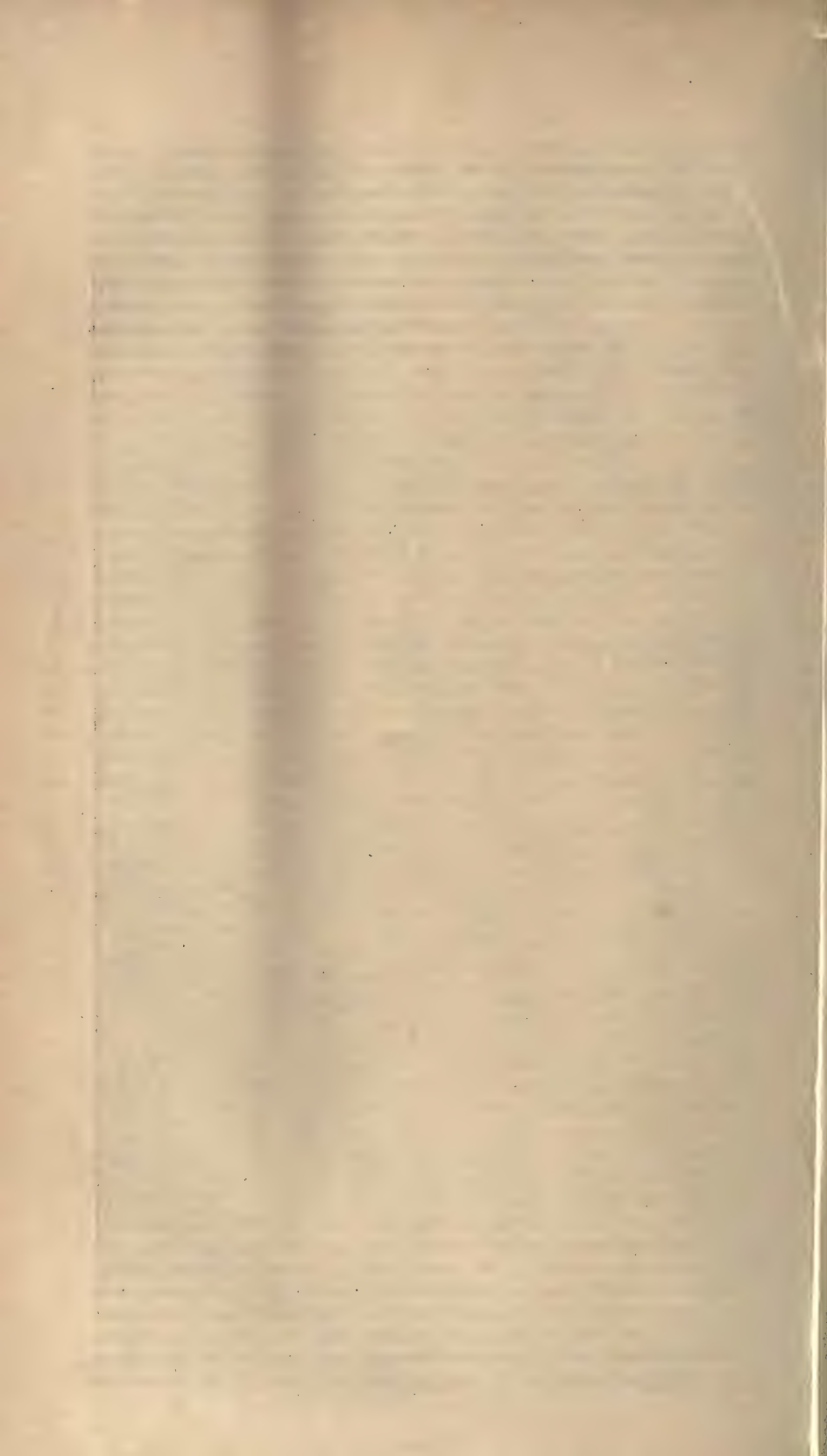
The terms of reference, on the basis of which the members of the Mosely Commission undertook to study and report on the educational systems in vogue in the United States of America, were to "investigate methods of education in parts of the United States of America, with special regard to their bearing on commercial and industrial efficiency." To this end, it was wisely determined that the *personnel* of the Commission should consist of men of very varied educational interests and experience, in order that no important principle or suggestive detail in any department of American education should escape the eye of some one or other of the members of the Commission.

In accordance with instructions received, it became, therefore, the duty of the present writer, as the only member of the Head Masters' Conference on the Commission (though I hasten to add emphatically that *my commission did not emanate from, nor was I officially nominated by, that body*), to investigate more particularly secondary education in America, including, of course, the relations of secondary both with primary and with higher education. Practically, therefore, my survey was to embrace the *whole* field of education in its chief manifestations, inasmuch as, throughout all the three stages aforementioned, manual and technical training in the United States enter largely (as will be seen from the present and other reports) into the organic schemes of the different States in the Union. But it was not the *methods* alone that were to be examined; the *spirit* which animated and permeated those educational systems had also to be taken into account. And here it becomes necessary to anticipate, and to affirm at once that a very slight investigation convinced the writer that in this domain, as in the domain of ethics, the spirit has been far more influential than the method in forming the character and enhancing the progress of the nation.

Causes of Industrial Progress.—It would be contrary indeed to all scientific experience to suppose that such a complex fact as the



A BOYS' PUBLIC SCHOOL CARPENTRY CLASS.



industrial and commercial advancement of any people—much less the *phenomenal* progress of the United States—should be referable to a simple and single cause.

1. Climate has much to do with it; the electric atmosphere, which makes of the whole continent a modern Attica, stimulates those who breathe that air with a restless and, at times, abnormal vigour.

2. Then comes in as an essential factor the vastness of undeveloped areas, in which men, especially those of the Anglo-Saxon race, find that scope for energy, which they lack in the limited and overcrowded spaces of the old continent, in the process of subjugating to their own purposes, and without let or hindrance, the virgin soils and boundless forests and mines of a practically unexplored continent. "The battle with nature on the frontier" has been in incalculably large measure the cause of breeding the stern mental and moral stuff which is provocative of success in life.

3. Cognate to this has been the absence of those well-defined social barriers which in England separate class from class, and which, even when broken down in individual cases, are built up again with other material; and further, the absence of the laws of primogeniture and of the pre-conceived traditions and "invidious bars," which, abounding unconsciously in our English training, prevents the *unrestrained* development of even the more ambitious spirits of our own people. Social emergence, often stifled by birth and circumstance in our close insular atmosphere, is a plant which has never been nipped or dwarfed in the ampler oxygen of the United States.

4. Last, but not least, the ceaseless tide of immigration of all races and climes and tongues, which, though polluted to some extent, no doubt, by the scum of "undesirable aliens"—a *colluvies hominum* which is responsible for much that is ugliest in American life and manners—yet is swelled mainly and far more potently by a flood of the most adventurous spirits of the Old World, who, from the very fact that they have been bold to break away from ancient ties, are men born to ambition, and are ready for the fierce struggle for bread as assuredly "as the sparks fly upward."

Add all these causes together, and it is not surprising that there results as an effect that *phenomenal* development in commerce and industry which is alike the admiration and envy of countries where climate, limitations of area, privilege, customs, permanence of race and caste, present greater barriers and afford less scope to the naturally soaring energies of man.

What part, then, do the *methods* of education, as distinct from the *spirit* pursued in the United States, play in this formative process? Are they to be regarded as contributory causes at all to the Gargantuan progress in commerce and industry and movement generally, which the United States is manifesting—a progress unexampled for its rapidity in the world's history—a progress which, like the tentacles of some octopus of the deep, bids fair to smother and engulf the industries of the Eastern hemisphere?

If the Commission had started on their quest a quarter of a century ago I think that their answer would have been unhesitatingly and unanimously "No." The leaders of vast enterprises, the chief captains of industry, have not, as a rule, owed their

capacities and successes to the particular kind of education they have received in the days of their youth, even in cases where they received any real education in every proper sense of the word at all. This is indisputable. The careers of the big men in America ten years ago—even the history of some of the pioneers of vast enterprises at the present day—form a sufficient and emphatic testimony of denial.

But the question, as propounded for us to answer in the year 1903, is by no means so simple or easy of solution. Phenomena, which are recognisable at first as effects only, rapidly react and become causes in the domain of national history. The present character of education in the United States is a phenomenon of this kind. It is, the present writer unhesitatingly asserts, *primarily* an effect and *not a cause* of the progress, industrial and commercial, of the great American people of to-day. The material endowments and the magnificent equipment of all kinds—an equipment without parallel and defiant of rivalry in any other country in the world—owe their existence to the benefactions of the great captains of industry, who have made their mark and their millions in the colossal enterprises which mark the commerce of America. These multi-millionaires who can be numbered not by dozens but by hundreds, instead of employing their wealth in adding broad acre to broad acre, and sitting down side by side with, or in the seat of, landed aristocracy (as their *confrères* in England have often done), instead of endowing churches or hospitals or charitable homes, have in great measure lavished their millions on building or endowing educational institutions. The Johns Hopkins University at Baltimore, the Leland-Stanford University in California, the Chicago University, on which John Rockefeller has bestowed gifts amounting to nearly £3,000,000 sterling, are three among many institutions which have been enriched beyond the dreams of avarice, and own endowments which may well cause Oxford and Cambridge to sigh for envy, and to pray for a resurrection in England of the spirit of their ancient founders.

Nor ought it to be forgotten that Canada has not been behind her sister over the border in the discovery of magnificent benefactors. Montreal, which the present writer visited, justly boasts that in her McGill University, the name of Sir William Macdonald is fit to rank with those of Hearst, Seth Low, and countless others—not to recall those already mentioned—and in her chemical, physical, engineering, mining laboratories, which owe in part their existence and their equipment altogether to the benefactions of Sir William, she possesses material appliances for the development of scientific knowledge at least not inferior to any that can be found in the United States.

So, while we feel confidence in affirming that to-day the present state of education in America *so far as regards mechanical appliances* is the effect rather than one of the causes—still less the *sole cause*—of American progress, it is obvious that that effect is every day becoming more and more of a cause; for the material advantage to the ordinary student, directly derivable from the fact that he has at his hand “without money and without price” such a magnificent apparatus on which to work, cannot but have its effect in the near future, and has already in fact shown itself in the capacity on the part of the American people for inventiveness, and, consequently, for increased and increasing reproductive power.

Teachers.—But when we turn from the material endowments of educational institutions in America and fix our attention on the *personnel* of the teaching profession, there is another and sorrier tale to tell. Comparatively few of the wealthy men in America have hitherto cared to immortalise their names by endowing the teaching staff, whether of universities, secondary schools, or elementary schools. Even the Harvard professors are not too well paid. The case is worse in secondary education. Here the teachers are so poorly paid by the State that the teaching profession has ceased to be a career at all. The present writer was credibly informed by the head-master of a well-known secondary school in New York that not more than 7 per cent. of the male teachers stay in the "profession" more than five years, and not more than 5 per cent. make it their life's vocation. The result is that even in the chief secondary schools in the cities there has been a gradual dwindling and elimination of men teachers, and an unhealthy preponderance of women teachers. In the Latin and the English schools of New York, Philadelphia, and Boston, the women teachers are in the proportion of 75 per cent. to 25 per cent. of men teachers. These secondary schools, it must be remembered, are for boys and girls from 14 to 18 years of age, so that it is not an uncommon spectacle to find a young woman of 24 or 25, who has just passed the university requirements, teaching English, or even Latin, to youths of 18 and over.

I think that it is not straining a point to say that the preponderance of female teachers in the higher or secondary schools—I say of set purpose *preponderance* and not *presence*—has an effeminating effect on the character of American boyhood. There is a tendency for women teachers when dealing with boys of such advanced age to instil (unconsciously, no doubt) sentimental views of facts, rather than to derive principles of conduct from them. This was specially observable in lectures and lessons on English literature and English history, though I hasten to add that, in the former subject, I listened to some remarkably analytical and exhaustive teaching from the more able women teachers. It is a subject in which they excel.

There is another cause which destroys the attractiveness of the teaching profession. As the teacher is entirely State paid, there is a cut and dried system by which teachers rise step by step. Exceptional ability is hardly, if at all, recognised, though failure in disciplinary and teaching power is discovered and penalised with greater frankness and frequency than in England.

The openness, indeed, in which teaching is conducted in the United States is one of its most pleasing points. Our Commissioners, and (I was assured) strangers generally, were welcomed in every class-room. Here master and teachers alike were not only complaisant, but eager and cordial in their invitations for us to listen to any and every exponent of a lesson, however young and feeble. Criticism was coveted; and the present writer was on many occasions, not only asked to take up a lesson and assume the part of lecturer, but even urged by the teacher to criticise his or her performance.

All this is in pleasing contrast with the point of view taken by the teachers in our English public schools. Mr. G. L. Fox, late master of the Hopkins Grammar School, New Haven, Conn., told me

that in his visit to the English public schools it was with great difficulty, and then only as a favour, that he obtained the *entrée* to some of the class-rooms at the most famous of our institutions, and that some head-masters felt compunction in being present in classes to help the "'prentice hand" of a raw and inexperienced teacher. That such a barrier of traditional exclusiveness (observable not in educational circles only) is unwholesome and ought to be broken down goes without saying, though many head-masters are debarred by want of time from carrying out their evident duty in this respect. The avoidance, however, of the policy of the "open door," which is a larger matter, results perhaps from the difference between the condition of American public schools, and English *so-called* public schools (for the title in England is a complete misnomer), the one being institutions directly controlled by the State and almost without exception day schools, the most notable of the other being in the hands of trustees, and being non-local boarding establishments. It may be pointed out parenthetically here that this difference should be consistently borne in mind in any estimate formed of the work and features of the American secondary school.

But to return to the *personnel* of the teaching profession in the United States. There is yet another and more serious drawback. The insecurity of tenure is one of its most unfortunate features. It is true that there is at the end of a laborious career a chance of a small pittance by way of pension, though here the practice differs in different States; on the other hand, the head-master and the assistant masters are to a large extent at the mercy of political wirepullers, who may for purposes of their own displace even the most successful exponents of the teaching profession. It can hardly be wondered at, therefore, that the profession, as a whole, attracts very few of the best men, and that there is a tendency for tutorial, and even professorial, work to fall into feeble hands, while there is an ever-growing tendency for women to displace men in all but the highest posts. This preponderance cannot be regarded without alarm. It is an anxious problem to many thinkers in the Eastern, and still more in the Middle, States as to what effect this preponderance of women teachers will have on the rising generation. It is no exaggeration to say that the expert school-master and character-reader observes a certain highly-strung nervous system, a want of power of concentration, and often an effeminate appearance, as being characteristics of the American schoolboy of to-day.

Co-education.—This point leads naturally to the question of co-education, which, in practically all the secondary schools of the United States, is carried on up to the age of 18 or 19. Various opinions, no doubt, may be formed as to the moral value, or the reverse, of that system. The present writer, approaching his study of the matter with a very open mind, unhesitatingly declares that on the whole, from what he has observed, the advantages of this system in day schools, and (he believes) also in boarding schools (when carried out under certain well-defined conditions), far outweigh the disadvantages.

The semi-monastic system, under which boys, at the most critical stage in their life, are forcibly separated for nine months in the year not only from the refining influence of mother and sister (as is the case in English boarding schools), but also from free and easy

intercourse with girls of their own age, has very serious and obvious drawbacks. The present writer has not only before him the evidence contained in the special reports on education in the United States, published by the British Government under the editorship of Mr. M. E. Sadler, but also the evidence of his own careful observation, to convince him that the *camaraderie* between the sexes by the system of co-education is, on the whole, vastly beneficial to the American boy and girl alike, and is largely corrective of (certainly in no way increases) the tinge of effeminacy which the preponderance of the woman teacher alluded to above is unhappily producing. There is an absolute *absence* (I might well add *disappearance*) of sexual strain; I found no trace of the awkwardness and shyness between the sexes which is a consequence of want of intimacy, and has a tendency to generate rather than to diminish such sexual strain, and which, existing to some extent in England, and accentuated in France, leads in my judgment to artificiality and grave moral difficulties in the social system. I never observed on any occasion when I assumed command of the highest classes in American secondary schools, where boys and girls were being taught Latin or English together, a single indication, *e.g.*, that, when a girl was called upon to "construe" or to answer, her utterances and her quasi-public appearance before the class was the signal for any amused recognition of the fact between the boys. On the contrary, the girl was regarded as the class-mate and nothing more; no trace of sentimentalism was ever apparent. I may here add that the girls showed a far greater power of concentration than the boys; the attention of the latter seems to flag after half-an-hour's lecture, even when given by the more interesting teachers. On the other hand, when there was occasion for display of originality, as in the English literature lessons, there was no comparison between the two. The boys far outstripped and showed greater interest than the girls.

Training of Teachers.—This point brings me to a feature on which it is important to dwell. I observed strongly in the elementary schools, perhaps not so clearly in the secondary schools, a grasp on the part of the teacher of the *scientific principle in teaching*. I attribute this, of course, entirely to the fact that every teacher has himself or herself to go through a complete course of the theory of teaching and of the principles of psychology (in the teachers' colleges or the normal schools, according as the aim is to teach in secondary or in elementary schools) before being permitted to teach at all. And when it is remembered that the teaching profession in the United States is, as has been already pointed out, not composed of the ablest and the more ambitious men (not to mention women), these evident traces of the scientific spirit are the more remarkable. It affords food for reflection, when one remembers that in England the necessity of scientific training for educators has been only recently, and still is, grudgingly acknowledged in the regions of secondary education.

Discipline.—The discipline in American schools has a character of its own. There is none of the uncompromising, unquestioning discipline which marks the well-governed English public school, and which sometimes, carried to an extreme, through the necessity of the case, in the non-local or boarding schools, has a tendency to efface individuality, and create what is called in cant terms "a tone." Discipline in the American school is essentially a compromise.

It depends almost entirely on the interest excited by the teacher and the teaching. It is lessened largely by the knowledge that the teacher holds his or her position, not as a right which cannot rudely be disturbed, but on the sufferance of the public of which the boys' and girls' own homes form an integral part. There is more lounging and more freedom of address permitted, and even encouraged, than is the case in the Old World. Pupils cross-examine their teacher, and "argumentation" between each other, and between themselves and the teacher, is a recognised part of the programme, so long as such "argumentation" bears on the lesson.

The methods of teaching, on the whole, are admirably conceived, though they are often not skilfully carried out. There is no "cramming"; there is a great deal of "elicitation." Pupils even in classical lessons are taught to ask the reasons why, and their intelligence is *drawn out*; facts are not *stuffed in*.

Teaching of Languages.—With regard to the Latin teaching I found much inaccuracy and antiquated method on the part of the teacher. Looseness of translation is permitted to a degree at which even our moderately equipped teachers would shudder. Really good scholars in the secondary schools were rare, though I can make one or two favourable exceptions which came under my observation—notably a classical teacher in Brookline School, Boston. There is very little exercise in composition, and what there is, speaking broadly, leads to poor results. The teaching of French was more antiquated still. I found hardly any traces of the enlightened modern system which is rapidly coming into vogue in some of our progressive English schools, where the teachers and pupils talk in the language which they are teaching and learning respectively.

Teaching of English.—On the other hand, the teaching of English was remarkably good, and far outstrips anything of which we can boast. I attribute this to the fact that it is a subject which, from the peculiarity of the component elements of American citizenship, has been emphasised from the beginning. It is inevitable that, when there is a vast tide of immigration daily pouring into the country of all nations, and languages, and tongues, there should be a deliberate and forcible attempt made to assimilate these heterogeneous elements by all the means at the disposal of the Government. The primary machinery to this end is the study of the English language from the kindergarten upwards, and there has been on the part of the educational authorities a most scientific and comprehensive scheme for the inculcation of the Anglo-Saxon language in its linguistic, grammatical, and literary aspects. The teaching of English literature in the upper classes of the secondary schools is of the most masterly kind, and I have heard women teachers who are certainly not behind men teachers in the power of exciting interest in this most important subject of education.

Mathematical and Science Teaching.—The mathematical teaching was, on the whole, good, its success being due partly to the influence of French methods, which had vogue in America in the last decade or two of the nineteenth century. In the better known schools and in the colleges Euclid had been more or less successfully dethroned in favour of the new geometrical methods.

The teaching of science in all its branches appeared admirable, being, of course, largely helped forward by the magnificent apparatus

and liberality of space, which are at the disposal even of the beginners in this subject in the secondary schools, while the emphasis laid on the subject through all the stages of American education has rescued it from being, as it has been till lately regarded elsewhere, the Cinderella of the educational family. In the universities, the same elaboration of appliances attracts a huge number of students, and there is an admirable percentage of men who are imbued with a spirit of research beyond the mere requirement of degrees—a spirit which augurs well for the future inventive power of the American people, already pre-eminent as they are in this power among the nations of the world. On this point, however, the writer leaves other critics more scientifically expert to dwell.

He would add, however, one characteristic of American methods in the pursuit of science which may be well commended and emphasised by the general educationist without “travelling outside the record,” as it embodies a principle often conspicuous by its absence elsewhere. The professors and assistant professors in science, as distinct from the students, are not forbidden, but encouraged, to unite with their professional duties some practical work in the world outside. Generous allowance of time is given to secure this extramural efficiency. A professor who is simply a professor, and who does not, or cannot, secure employment and emolument in industrial undertakings, is looked upon as a *non-efficient academic*. Hence comes a close touch between scientific theory and commercial and industrial “practice,” which has already produced the happiest and the most fertile results in inventive power. The jealousy with which some professional appointments are guarded in England, and which prescribes that no work must be sought or done outside academic walls, is regarded as suicidal policy in America. Fortunately this narrowness is not true of all academic institutions, even among ourselves. To quote an illustration which occurs to the writer, it is unusual, and would be to the last degree unwise, for the governing body of a non-local secondary school to insist that the medical officer appointed to the institution should not take outside practice. The result of such limitation could only be to make the school doctor rusty and non-efficient, though, on the other hand, it would be wise to insist that the health of the institution should be his primary care, and to that all other “practice” should be subordinated.

Manual Training.—Any survey of American secondary education would be incomplete without a reference to the manual training, which forms an integral part of the systems in the majority of secondary schools in the United States. The connection between mind and hand is recognised there to an extent which preconceived prejudices have hitherto rendered impossible in England. But instead of manual training being confined to those who are to pursue an industrial or engineering career, or to those who are relegated to “shops” merely as a *dernière ressource*, because they are incapable of the abstractions of book learning, in the United States it is regarded in many of the best developed schools as *an integral part of a liberal education*. Its importance in this aspect varies indeed in different States, and in different cities, but everywhere it occupies an honourable place. It is, moreover, graded on carefully thought out systems from the cardboard “modelling” of the kindergarten to the skilled engineering processes in the colleges

and universities. Though space forbids me to enlarge on the value of this feature of American education, my report would lack a completeness satisfactory to myself if I did not pause to emphasise my profound sense of the value of manual training as scientifically carried out in the schools of the United States, leading as it does to the happiest results in promoting that versatility and alertness which is so characteristic of American workers. It is almost impossible to exaggerate it. But the reports emanating from those of my fellow Commissioners, who have more claim to be regarded as experts in this part of education, will doubtless be more full and convincing on this point.

Curricula.—The general features of the curricula pursued in different States of the Union next claim attention. It would be impossible in any report to give any comprehensive sketch of the different hours allotted to the various subjects, though the trend is unmistakable. But, speaking broadly, one may observe that English language and literature in the ordinary high schools throughout the four-year course (14-18) get as much consideration as the foreign language or languages (ancient or modern), four hours a week being devoted to each; two hours are assigned to ancient, or mediæval, or modern history, in three out of the four years of study; algebra or geometry occupies four or five hours during the first two years, while the hours are afterwards reduced to admit in the remaining two the physical sciences, to which are assigned six or more hours in the third or fourth year. Physical training is accountable for two hours (drill and gymnastics), and to singing is assigned one hour. The students attend on an average about 20 "exercises," or "recitations" (*Anglice*, lessons), of about 45-50 minutes each. Home work varies from ten to twelve hours per week.

In the so-called Latin schools, where the course (*e.g.*, at Boston) lasts for six rather than four years, the insistence on English and on Latin is greater, French being only taught two or three hours per week in the third, fourth, and fifth years, while to mathematics are assigned only four hours, and to science one to three.

The system of "electives," *i.e.*, the giving of "choices" to students as to what particular kind of study they should pursue, is carried to an extent unknown elsewhere. As a protest against the "cut and dried" prescribed course, which is characteristic of the ancient English foundations, where all are driven along a narrow groove (often despite absence of power and proclivity) to a preternaturally late period in the student's educational life, the system of electives has its value. It does not disgust or repel. It produces few, if any, "hopeless cases." Superannuation, the artificial means by which these "hopeless cases" of the narrow-groove system are eliminated from the schools, with all its attendant injustice, is unknown. On the other, the system of electives has been allowed at far too early an age (14) in America. Though nominally the parent has the authority to say what subjects his child should pursue, practically the boy or girl has the power in his or her own hands. There is observable, therefore, a gravitation towards "soft options." The student chooses what he likes because it is easy, and it is easy because he likes it. One looks in vain, therefore, for that "mental gymnastic" which consists in fighting difficulties, and the bracing of the character which ensues from it. There is yet to

be found the *media via* between the evils of the two extremes, though in some States and cities of the United States the ideal is nearly approached. This occurs where "electives" are not permissible till the third or fourth year of the secondary school course (16 to 17), or even (better still) deferred till the university course begins.

A word or two remains to be said as to the percentage of boys and girls who go through the whole educational course up to the fourth year of the secondary school stage: also as to the percentage of days in the year during which the student attends school. To take the latter first—in the elementary schools in the Middle and Eastern States the normal attendance may probably be put at 200 days in the year—a somewhat lower average than that obtaining in England, the deficiency being attributable largely to the heat of the summer season and the consequent length of the summer recess. The "educational mortality," as it may be called, is startling. Here figures are less trustworthy, and the "mortality" varies in different States and localities; but it may be said broadly that, of the total number of children to whom the State offers free education in the *secondary* as well as in the *primary* schools, only 12 per cent. begin the secondary course, only 7 per cent. complete it, while only 5 per cent. carry on their education at the universities.

The Spirit of American Education.—I have reserved to the last what is the most remarkable as it is the most admirable feature in American education—the *spirit* (as distinct from the *method*) which animates both teacher and pupil, and their keenness for education as "the one thing needful." As has been already seen, there is comparatively little to be learnt from the *methods employed*—at any rate, in the sphere of Latin, French, and even mathematical teaching, though in "English" and scientific teaching, and in the recognition of the close affinity which these subjects bear to practical life and industries, American methods are far ahead of our own; on the other hand, in the judgment of the present writer, the *phenomenal* rapidity of American industrial progress can certainly not be assigned to *this sole cause*. But the more the American educational *spirit* is examined, the more unstinted is the praise which may justly be bestowed.

On the part of the teachers (confessedly not men or women as a rule greatly skilled in the art they profess) there is yet an enthusiasm which ignores drudgery and sustains and inspires energy, and this, in spite of poor pay, insecurity of tenure, and almost total absence of "prizes in the profession." With the pupils the enthusiasm for learning is not less intense. Nervous, impatient of concentration, independent in discipline as the American boy is, his deficiencies are more than compensated for by his desire for education as such. In my examination of schools of different types and proficiency, I never stumbled across a really idle boy. Even constitutional slackness seemed to be tempered by a touch of ambition. And what is true of the American boy is true also (only that it can be affirmed with still greater emphasis) of the American girl.

The self-seeking *materialism* with which the American is often charged has the lie given to it in the *spirit* with which the acquisition of knowledge for its own sake is viewed (not here or there) but by the universal sentiment of the whole people. The

almighty dollar cannot be the only god of a nation imbued with such an *idealistic* view of the end of life, whose favourite text seems to be:—

“With all thy getting, get understanding.”

A nation permeated through and through with such sentiments has indeed in its possibilities beyond what it has even hitherto shown, for there works in its midst “the spirit of the mighty gods.”

Countless stories are told of the sacrifices which young men at college, equally with boys at secondary schools, make in order to pursue their studies at any cost. A little pamphlet put into the writer's hand, called “Self-help at Yale,” is eloquent on this point. But written testimony is needless. Cases met the attention of the writer at every turn. Young men will hire themselves out as telegraph operators, as waiters, as postmen, as temporary occupants of any menial post involving work in the evenings, if only thereby they can secure enough funds to pay their lecture fees in the daytime at the universities. Below I give without comment an extract from a newspaper chosen almost at random, which is typical of hundreds of other cases of like character:—

“BOY IN HARD BATTLE TO GET AN EDUCATION.

“SIXTEEN YEAR OLD LAD TURNED FROM SCHOOLS WHEN HE ASKS A CHANCE TO WORK HIS WAY.

(Special Dispatch to the *Herald*.)

“Poughkeepsie, N.Y. (Sunday).—Harold Rember Parker, 16 years old, of Lowell, Mass., applied at police headquarters in this city last night for lodging, and was permitted to sleep on a bench in the city court. He told of a hard struggle to get an education.

“Young Parker says he is the son of a poor widow, and seeing that he was doomed to work in the Lowell Mills he appealed to Walter Hall, publisher of the Harvard College catalogue. Mr. Hall recommended him to a school at Newton, N.J. He remained at the Newton School four weeks, when it developed that he could not earn money enough outside to keep him in clothes.

“He had spent most of his money for football clothes, hoping that he would be able to win a place in school by his proficiency on the grid-iron.

“The lad called on Major Joseph Bisbee, of the Riverview Military Academy, in this city, to-day, and was told that, because of the many young men who are now working their way through the academy there would be no room at present for him. He then went to call on Mr. Gaines, president of the Eastman College, who is absent in Virginia. Mrs. Gaines, who is the mother of T. L. Woodruff, of Brooklyn, gave him employment in her home and promised to arrange for a place for him in the college, if possible, when her husband returns.

“Parker was delighted with his success, and declared that he would surmount all difficulties in getting an education.”

Indolence is viewed from quite a different standpoint than obtains nearer home. Of organised idleness there is still less trace. It never enters into the calculations of a people permeated through and through with the earnestness of life that there could exist a class of young men who are sent to “seats of learning,” not primarily to gain education, but to receive a certain social stamp, to make fashionable friendships, and treat the institution which they enter, as a late French writer drily observed, “as a club, or a town, as anything but a school.” An American cannot understand that attitude of mind (if mind it can be called), consecrated by centuries of aristocratic “white-handedness,” which regards it as “bad form” to work, and not seldom seeks in after life to persecute those who set themselves to master the details of the profession

in which they have undertaken to serve their country. The American has a scathing name for this class of young men. They are "tramps."

To whatever cause this healthy and robust view of life which obtains in the student life of the United States may be attributed, whether it be to their freedom from inherited prejudices, to the absence of strong lines of demarcation between class and class, which makes every American boy feel that nothing in the future, not even a residence in the White House, is impossible for him, or whether it be partly due to climatic causes, certain it is that it is a phenomenon which no critic of American education can wisely disregard or scarcely fail to record in his estimate of the essential causes which are making for the industrial progress of the people of the great Republic, on the portals of whose every temple of learning there seems to be inscribed this stern and unflinching motto: "If thou wilt not work, neither shalt thou eat." For such a nation there would seem to be reserved incalculably great possibilities of future destiny.

H. B. GRAY.

Mosely Educational Commission.

Report of Mr. W. P. GROSER, Nominated by the Parliamentary Industry Committee.

I.—EDUCATION AND INDUSTRIAL SUCCESS.

Whether here or there, it is easier at present to obtain reliable and comprehensive descriptions of the education of the United States than of England. This report will not attempt to add another, nor will it detail statistics, for these things are available readily elsewhere. Its scope is shortly to consider some of the personal and educational factors which make for industrial success in the United States, to compare with them conditions here, and to suggest in what direction, to what extent, and by what means we can profit by American experience.

Many relevant problems have to be entirely omitted or dealt with inferentially. And I am anxious to emphasise that I am concerned here with the good, and not with the bad. It is the bias of an inquirer abroad to disregard progress at home. But that aspects which contain lessons are more relevant should not suggest the absence of many phenomena intrinsically undesirable or unsuited to our conditions. Only where such phenomena are interdependent with benefits I shall try to indicate them. Illustrations are selected almost at random from many available. An institution is likely to be singled out more from my better acquaintance with it than from any superiority to others. To all whom I met in the States my thanks are due for their invariable kindness and willingness to give me their time and stores of information. My thanks are due also, as well as to Mr. Mosely, to the Parliamentary Industry Committee for my appointment as their representative, and to the great advantages for investigation which I have consequently enjoyed.

A.—The Workman.

1. *Primary Education.*—The workman's is the same as another man's. He sits on the same form as, perhaps, the President's son, and is required to stay at school in most States from the age of 8 to 14, and until 16 in several of the most populous and industrially important States (*e.g.*, New York, Pennsylvania, Connecticut, Minnesota). The common schools vary in every way and to every degree, for each State has its own system, and each teacher his or her own individuality. The average of attainment in them is no higher than in England. The progress is slow, the methods are discursive. But the relations between teacher and pupil are much closer, the method of discussion is employed with great benefit to mental development, the pupil's mistake is followed up psychologically, and by these means a more inquiring and critical attitude of mind is produced, with a greater appreciation of the value of education.

The anxiety to hold the attention and the constant divergence into related but irrelevant topics possibly cultivate a large sense of

personal importance and an inaccurate and superficial habit of thought. But a recognition of the unimportance at this stage of the acquisition of specific knowledge, and the all-importance of a spirit of inquiry, individuality and initiative, is general in the United States. These qualities lead the workman to continue his education, to read the newspapers, and to appreciate the interrelation of branches of knowledge. His intelligence on leaving the common school is not developed to a higher average, but is of a more curious and alert type. Instruction in what may be termed the elements of civics and the insistence with which the national idea is kept before his mind tend to influence his conception of a citizen's position and duties. His association with boys of a higher social station is a factor in the production of the democratic spirit, and has a considerable influence on his subsequent relations with his employers.

A very interesting, though I think uncommon, opinion is that of an authority—the general manager of the Baldwin Locomotive Works. He prefers a boy without manual training on two grounds. First, it takes six months to eradicate from such a boy the idea that he knows. He has to unlearn much, since his ideas and methods are not commercial; he wants to do things “too well,” and to spend undue time on them. Secondly, he has rarely had such a good general education, since he likes the manual training, and for it neglects less interesting work. A further and relevant opinion of the same gentleman is that education should be done once for all. He deprecates a period of shopwork after leaving school, and subsequent college training, as well as the “sandwich” system. This course, he holds, wastes the progress made in the shop, for methods change in four years, and gives the man the wrong idea that he is an engineer and not a mechanic.

It must never be forgotten that since secondary education is free though not compulsory a vastly higher proportion of the population receive it than with us, and the public opinion in favour of education is so strong that few lose it to whom or to whose parents maintenance meanwhile is financially possible.

Free libraries are many, largely used and liberally conducted.

The alien problem is dealt with most successfully. In common schools and elsewhere the national idea is sedulously cultivated, and instruction is given in the United States in constitution and the rights and duties of citizens. In New York the immigrant quickly imbibes American feeling and sentiment, and the next generation is more American than the native. In spite of preventive regulations, it is true to-day that assimilation and not exclusion is the policy. Civics in one form or another is taught at every stage of education. The question is important. In the public schools of Massachusetts, for instance, 64 per cent. of the children are either foreign born or once removed. But they are all Americans.

2. *Technical Training.*—I use the term “workman” here to include also labourers, journeymen, and mechanics. A distinction is growing up rapidly between the workmen who have had a technical course and those who have not, the former commanding better positions at higher wages, and at present a certainty of constant employment. The cry among manufacturers everywhere is for more skilled men. Many of them try to supply their own demand by a variety of apprenticeship systems which are dealt with

elsewhere (*D 3*). They are anxious to secure educated and intelligent men, even without technical or special knowledge. Mr. Hulburt, the president of the Elgin National Watch Company, told me that he has a standing offer that any graduate of the Elgin High School (boy or girl, probably 17 or 18 years old) may come to the works, and will be taken on at a wage of a dollar and a half a day (37s. 6d. per week) and regularly taught. Many come. "In the last 18 months," he said, "I have had 30 of them; six proved not adapted to the work and were discharged. The others have done splendidly, though in the final rooms it is six months before they are much good to us." The unions have raised no objection, though they might possibly do so if work were scarce. Mr. Hulburt gave the High School the whole of its manual training equipment.

The completeness of the facilities for technical training, day or evening, theoretical and practical, we cannot rival. It is not so much the elaboration of the plant and equipment in the Massachusetts Institute of Technology, or any distinguished superiority in the methods of instruction, but in the number of such institutions, their completeness, their systematic education, and their determination to teach the mystery to whose practice the students propose to devote themselves. Liberally as our Technical Instruction Acts are construed, the Pratt Institute, the Philadelphia Textile School, a hundred such places through the States would laugh to hear that as a concession to trade unionism the one thing we may not teach is the one thing the students want to learn. In America they know something of trade union tyranny—at one of the schools I have mentioned the chief instructor in plumbing is a walking delegate, and no one is instructed who is not in the trade. We have this restriction, but nowhere, I believe, in America has it been suggested that a technical school must not teach a trade, must give shopwork only as an illustration, must carefully refrain, in the words of the U.S. Commissioner of Labour, "from giving sufficient practice to enable the pupil to acquire dexterity, or in any manner do away with the necessity of a regular apprenticeship in the trade." We may hope that in this matter full scope will be allowed to that substantial reform, which passed almost unnoticed in the shadow of other controversies round the Education Act, 1902. In America most of the technical and textile schools are trade schools, but in the longer courses they combine a full scientific and technical instruction which is education in the highest sense.

To the excellence of their work, its practical and educational value, almost every professor, manufacturer, and graduate will bear witness. As an illustration, I excerpt a passage from a report on the metal trades by Mr. Carroll D. Wright, U.S. Commissioner of Labour:—

"Of the 80 establishments in this industry from which schedules were obtained, 8 report that the special training of their workmen in trade or technical schools has resulted in increasing the amount of the product from 10 to 20 per cent., and in one case 50 per cent.; 25 report improvement in the character and quality of the product, and 20 report that workmen who have the benefit of instruction in these schools receive from 10 to 50 per cent. higher wages than those who have had shop training only."

The superintendent of a large metal manufacturing establishment in Massachusetts said:—

"Recognising the advantage of trade and technical education, a few years ago we adopted the policy of allowing our employés, without loss of wages, the privilege of attending an afternoon class which we had succeeded in having

established for them in a local trade school. The knowledge acquired by these men, together with the training received by many others in our employ who attended the night classes in the school, has been of inestimable benefit to our business. The workmen are more intelligent and better qualified to advance in the trade, and they require far less oversight in the performance of their work. The presence of these trained workmen distributed through our shops has had a beneficial effect upon those with whom they come in daily contact; they have stimulated the desire for technical instruction among those who otherwise would have neglected it, and they have been a powerful factor in elevating the general character of our product. The technical training of these men, added to their previous training in the shop, has made it possible for the company, by their aid, to promote all departments of its manufacture, and, among other things, to enter quickly and successfully upon and establish the manufacture of an entirely new line of machinery. This has resulted in increasing our business fully 50 per cent., the positions and wages of our workmen have been correspondingly improved and advanced, work has been provided for many additional workmen, and the investment in our plant has been increased. . . . Prior to the invention of this line of machinery, except to a trivial extent, the American market was controlled and supplied by foreign manufacturers. Therefore, it is not too much to say that the special education of our workmen has materially contributed to the establishment of a new industry, of no small proportions, which did not before exist in the United States."

3. *Character and Circumstances.*—When workmen believe that these two words are inter-dependent economic laws may be trusted to govern the world.

The American workman earns more than the English. His expenses of living are slightly greater. The skilled mechanic earns considerably more, chiefly through the prevalence of piecework and agreements or schemes against cutting prices (*D 2*). For every increase in the standard of comfort, the cost of living increases more than proportionately; the higher standard of comfort of the skilled mechanic is due as much to his personal habits as to his greater purchasing powers.

The workman often owns his own house, often obtained through a friendly or building society. He frequently gets the advantage of country life from (*a*) the less crowded condition of the country, (*b*) the transit facilities of the trolley-car system, with a uniform 5 cent ($2\frac{1}{2}$ d.) fare for any distance, and workmen's tickets at reduced rates.

Among the workmen, drinking and betting hardly rise to the level of national evils. The Baldwin Locomotive Works at Philadelphia employ over 18,000 men, and Mr. Samuel M. Vauclain, partner and general manager, who has a great personal interest in and knowledge of the men, says that the great majority of them are teetotallers, that of the remainder not one in 200 drinks to excess, and that there is no betting to complain of. Mr. Charles Hulburd, president of the Elgin Watch Company, says that his 3,000 employés, men and women, are very sober and temperate, and that there is almost no gambling: that though among his skilled workers there is a good deal of beer-drinking and betting, there is almost none to hurt the company or their families. In this particular factory the moral tone is particularly high, as are the wages. Bad characters are speedily discharged, and to a visitor the appearance of the workpeople, men and women, suggests that their incomes can never fall below £1,000 a year. Indeed, "smartness" in appearance, particularly among the women, is so universal that it is difficult at sight accurately to distinguish social grades. These two opinions on this subject are selected from many available to the same effect.

A large proportion of the workman's earnings he takes to his wife. Possibly as a result of co-education, and greater independence and freedom among the women, the pursuits of husband and wife are more often shared than with us. Theatre-going and newspaper reading are very general. They are conjoined here because the newspapers chosen are "yellow" and sensational, the theatres patronised vulgar and melodramatic. They travel little—much less than our working classes—the distances being greater, the passenger fares higher, and the system of cheap excursions practically non-existent. Usually man and wife are interested in local politics. When national politics deserve attention the interest may possibly be transferred. In the town of Elgin, Illinois, the chairman of the Board of Trustees for Education is the chairman of a Labour union in the watch factory, and four of the twelve aldermen are employés.

There are Workmen's Compensation Acts in hardly any States. Private schemes are infrequent, and the usual practice is to make each case a matter of individual arrangement, to some extent limited by precedent. The arrangement seems to work satisfactorily. I could not discover any case of complaint, but, of course, a negative statement of this kind does not go far.

Perhaps the workman's most prominent characteristic is his alertness and devotion to his own interests. This tends to keep him from union tyranny, his action individual, and his mind reasonable. He is willing to consider any suggestion, even a new one, for the improvement of his own position. Appeals to his pocket usually succeed, even though founded on an economic argument too subtle to be expressed in an epigrammatic antithesis. More money for harder work generally appeals to him, and the horror of limitation of output is comparatively unknown—a point I deal with under "Labour Unions" (*D* 1). He has mastered his constitutional objection to labour-saving machinery.

This attitude may be called ambition. It is due to his relations with his employer, his expectancy of promotion, and his firm conviction that he is as good and probably better than the other man. Any American will sum up these conditions as a manifestation of the democratic idea. The relations between employer and employé will be considered later (*C* 2), since in the former's attitude they must originate. It is enough to note here that the workman regards his employer rather as a colleague to be assisted than as a tyrant to be circumvented. For he believes that he can rise, is desired to rise, and that his progress is watched. Consequently, when he has an improvement in machinery or method to suggest, he consults the employer, generally willing to rely on the latter's treatment securing to him adequate reward.

The foremen are usually popular. In every way they are induced to encourage ability. Generally they are civil to their men, and a cursing or conceited foreman soon disappears. In return, the men recognise their supremacy without resigning their attitude of equality, and obey, hoping for as much again. Their tenure is the advancement of merit, and the constant vigilance of higher officers and employers makes oppression dangerous. A useful plan is a monthly meeting of all foremen with employers, when, and at no other time, their complaints are considered. A large proportion of foremen have had some technical training.

The absence of drunkenness and habitual betting, the freedom of piecework and output, and the relations with the employer are among the foundations of the American workman's satisfactory condition as well as of America's industrial success.

B.—The Officer.

In this name I include persons occupying intermediate positions between the heads of the business and the foremen and workmen.

1. *Primary Education.*—There are many private elementary schools attended by children of wealthy parents, who often are of the ultra-smart set, or desire special individual attention for physical or mental weakness, or wish some special educational theory applied. In addition, too, a large number regard the greater individual attention possible as of genuine importance. These schools are as costly as, or more so, than our "high-class" preparatory schools. But the distinguishing feature of primary education is that the majority of children of all classes and both sexes attend the common school. Its consequences are far reaching and, for America, valuable.

2. *Secondary Education.*—The attendance is for about four years, between the ages of 13 and 18. The private schools are here more important. The two largest, modelled on English public schools, are Lawrenceville, N.Y., and Groton, Mass. In these two, in all others to varying extents, and indeed throughout American education, the attention given to physical culture is carried to a degree which seems to me almost excessive. The private schools are expensive: it costs as much proportionately to keep a boy at Lawrenceville as at Harrow.

The public high schools are calculated to carry a child from the common schools to the college. They are free, so that as a rule any child who can be maintained for the four years can attend them. A far larger proportion attends, and whole classes of children get a high school education who with us see the last of direct instruction at 13. I regard the system of high schools as excellent and valuable. But in them, and in the private schools, the standard of attainment is no higher than, if as high as, with us. A striking phenomenon is the great and increasing proportion of children who study Latin, particularly in the West. The same applies, in a less degree, to Greek. The subjects are both elective, but their popularity is yearly increasing; the same is the case in the universities, and it seems at present that the United States is discovering independently the lessons which England is trying to unlearn. In every case I came across the teaching of Latin was inaccurate and almost slipshod compared with our public school standard. And I think the spirit is even less grasped.

Science takes a more important place. Elementary biology, botany, and zoology are generally required subjects. But throughout high school education the same phenomena are apparent which I have noted in the case of the common schools. The excellence of the product depends far less on any particularity in the methods of attainment than on the spirit of inquiry, of interest, of freshness and of earnestness, on the relations between teacher and taught, the open discussions, the apparent recognition by the pupils that their instruction is not the manifestation of an ignoble conspiracy.

From this, and not from the actual knowledge acquired, results the inquiring and ambitious attitude which is at the root of success.

The many business and commercial schools present no important features. The mental training could be better acquired by other means, and apart from shorthand, typewriting, and book-keeping I do not believe that anything is gained which is as valuable to anyone as a high school course.

The comparative unimportance of examinations is of great advantage in time and efficiency. It is a popular and well-founded gibe in the United States that we cannot work without examinations, prizes, or scholarships. The almost complete absence of emphasis on these points is of great advantage to America. It is possible that a course may be popular which is merely valuable, which neglects entirely the really essential thing—the examination or scholarship syllabus. The point is of the first importance, but is so universally recognised in theory that in spite of its complete neglect in practice I shall not devote more space to it.

3. *University Education.*—A few features only can be noted here. The “elective” system is practically universal, within limits. To me it seems that the required subjects in any course are so comprehensive and the advice of tutors so valued, that its effects are greater in sentiment than in practice.

Classics, notably in Yale and Princeton, has a growing predominance, but the science schools have not our disadvantage in prestige. Of the instruction all that can be noted here is the greater elasticity and breadth of a system in which results are less measured by examination. Such courses as that of Mr. Woodrow Wilson, President of Princeton, in “politics,” ranging over general jurisprudence, constitutional history, ethics, principles of economics, and international relations, lead to no degree, and fulfil only the function of giving the student invaluable training as a citizen.

There are many universities with diverse characteristics. But, except perhaps in one, it is not only possible but of constant occurrence that men should work their way through from start to finish. It is by no fiction or occasional eccentricity that we hear of men occupying their vacations in almost every class of labour. There are many instances at Harvard or Yale as well as at Columbia or Chicago; and though it is obviously unlikely that men to whom this was necessary would happen to be in the particularly “gilded” set in a large university, it is the fact that such a man does not suffer socially for his circumstances and his industry. An arrangement like that at Chicago, where men get their board and lodging free for performing certain domestic services, such as waiting on the other students at meals, etc., seems to me likely to bring the system into disrepute eventually; but there are obvious advantages in the sentiment which enables a man to earn an education which otherwise he would have to forego. At the State University of Minnesota, and at others, the terms are arranged to be in large measure complete and self-contained, so that a student, having spent his money, may go away and earn some more, returning to take up his studies with comparatively little loss. The most striking difference in the actual work of the college is the wide choice of courses afforded, and the fact that being applied not to examination standards the student is more likely to combine knowledge with culture, fitness for life with fitness for research.

Ideas and conditions differ ; it is as a statement, not a comment, that I mention that at Oxford and Cambridge the graduate is out of place ; at Harvard and Yale, Columbia, Chicago, Minnesota, Michigan, and many others the university as distinct from the college—the graduate professional schools—are of the first importance. Of their work all I can note is that it is in many instances adapted directly for professional training. Graduation, for instance, in such a law school is, in effect, the sole requirement for admission to the legal profession.

In many colleges, schools of "commerce and administration" (to choose a popular one among various designations) are rapidly becoming important departments, though none of them with which I am acquainted has existed long enough for its effects to be adequately judged. Their syllabus, including commercial history and geography, economics, finance, distribution of products, railway development, agriculture, and many other topics, is so comprehensive that probably students lose less in general culture than would be expected. The opinion of the general manager of one of the greatest railways, to whose profession these courses are frequently directed, was that their value is no more than their general mental training ; this view was admittedly based rather on theory than experience, and is quoted rather because of its intrinsic authority than its argumentative validity. Under certain conditions the course would seem most valuable, but not in the majority of positions for which entrance at the bottom is demanded. For a "missionary" to discover, acquire, and extend markets it would certainly be most valuable, and, adapted to English requirements, it seems to me an experiment worthy of imitation.

Whatever be our handicap from university athleticism, America's is heavier. There are differences in method—there fewer play, and more bet on the touchline. Their system is commercial and businesslike, and by their failure to recognise that the game's the thing, the result an incident, the true spirit of sport and its great benefits are largely eliminated. To them, a fast and fair game seems no consolation for an adverse result. At one of the largest universities (and I believe similar conditions prevail very generally) the prejudiced mind of a senior professor—no sportsman evidently—discerned a disproportion in the chief football coach's salary of £750 for six months' work and his of £500 for nine. But some principal professors received £800 or more, so that the dignity of learning was becomingly vindicated.

4. *Professional and Technical Education.*—The Massachusetts Institute of Technology has plant and advantages which no school in England can boast. There are several such institutions in the States, and the completeness of scientific and technical education obtainable in them is an admirable training for the interests they serve. Lavish expenditure in plant and equipment, comprehensiveness in instruction, and direct application to appropriate occupations are their notable features. Mr. Swain, professor of engineering in the Massachusetts Institute, told me that he received 160 applications from railways, structural companies, etc., for the 35 men who graduated as C.E. in 1902, the salaries offered averaging ten guineas a month, with a rapid rise. Low salaries to begin, with rapid increases, are almost universal. At the Elgin Watch Works one man is earning about £450 a year and has 200 men under him who three years ago came there direct from the Massachusetts Institute.

The textile schools, of which that at Philadelphia is an admirable example, are most practical. Mr. Theodore Search, the founder, president, and principal, is himself a manufacturer. "When I started 17 years ago," he said to me, "I did not at first know what to teach. Then I thought what I wanted the men in my own mill to know, and gave them that." The remark is illuminating. The course takes three years. All entrants—there are now 1,000—must be at least of high school graduation standard, and a number of university graduates present themselves. Everyone takes theory as well as practice, and beginning at the beginning learns to do everything for himself. They card the wool, make the dyes, and themselves complete the article. "When our man has finished he knows every process for himself, can be sent abroad to find new markets, knows all the tricks of the trade and the ways of the market." A Harvard man spent eight months in a mill, gave it up, and came to the school. He told me that in a month he discovered many most elementary operations he had never realised, because in a mill, for economy, women and boys do them, and such men are saved the drudgery which often includes important processes. Mr. Search was emphatic on the necessity for a good general education first. "You can't do these things on the three R's." The school's products are sold; economy in working the plant is effected by keeping the carding machines, etc., running constantly, tended by women, the teachers and students taking over the work within their hours.

It is worth noting that originally many manufacturers opposed the school as useless; this has changed, and there is a big demand for its men. Much of the existing plant is the gift of the worsted yarn manufacturers of Philadelphia. The school is exempt from all taxation, and has a grant from the city. It runs also an evening class attended by some 200 students.

On the subject of engineering education, Mr. W. Barclay Parsons gave me some views which are entitled to particular respect. Mr. Parsons is the chief engineer of the Rapid Transit Board of New York, and is familiar with the profession in most European countries. Under him is a staff of 322, and some 9,000 workmen. His view of the advantages of American methods is that the young engineer is trained to a general familiarity with the simpler work in every branch, while the Englishman has instead specialised knowledge of a department. The American can, therefore, undertake practical work at once with greater confidence. He knows where to find his advanced knowledge when it is necessary, and the broader training has produced a mind of greater elasticity, adaptability, initiative, and self-reliance. He strongly advises, and gives his sons, a double course—first a degree in arts, then a professional course, as giving essential breadth and enterprise. In most universities, by the way, two such courses may be combined in six years instead of the normal seven. He lays, too, great importance on engineering being taught by men actually engaged in the practice of the profession at the same time.

5. *Initiative*.—"My great difficulty," said the manager of a manufactory, "is to keep an office-boy." Some years ago I asked a well-known newspaper proprietor why his personal confidential staff were Englishmen, since he chose none of them for his paper. "I would rather have Americans," he owned, "but if I told them as much as I do my present secretaries I should soon have an opposition

paper on my own lines across the way." We need not be dissatisfied with this answer. But it indicates also that in personal enterprise the young American is far ahead. A young Englishman set to a piece of work need not, I think, fear competition. But a young Englishman cast loose into the world is likely to be still seeking a suitable berth when the American is emerging from his second bankruptcy for half-a-million.

I have quoted Mr. W. B. Parsons on the prevention of excessive adherence to authorised methods by breadth of education. It is this breadth that gives the American self-confidence in pursuits other than his speciality: he feels less that he has special knowledge which it is extravagant not to utilise, and is willing to change his situation, his methods, his profession itself at a day's notice. A good chance is always worth a bad certainty to a bachelor.

As an example of adaptability, Mr. Hulburt, who, on becoming president, converted the Elgin Watch Company into a conspicuous success, had no previous connection with such work, and entered upon it after he had retired from sixteen years' practice of law and another business.

In the United States I met one large employer, himself a 'varsity man, who did not much appreciate the results of college training. And on these topics he said, "But 'varsity men as a rule have more initiative. For 99 per cent. of the non-university men it is hopeless to expect to get to the top."

Few young Americans put safety high among their desires, and those wisely do not say so. Restless ambition is almost universal. "Of course they're all ambitious," Mr. John Wallace said to me; "sometimes they're nothing else." They never get away from their schemes. The small boy from the common school, the young man from the university, are equally unwilling to stagnate on a competency. Their ambition is, to a certain extent, national, and this spirit is carefully fostered. The fact of this enterprise and ambition, produced by broad training, relics of pioneer spirit, the confidence in his superiority to his neighbours, and ideals of success which include neither leisure nor politics, whatever its influence on the body politic, makes him, in his own field, fertile in conception and swift in action—a strong competitor to any man.

6. *Promotion*.—Salaries usually begin low, but rises begin early. The firm belief of the employed that he is desired to rise and that his progress is being watched is allied to a recognition by the employers that only on procuring the best men and utilising them in the fullest sphere they can dominate can their success stand. Foremen are encouraged to report ability—to do so means reward to them also. Mr. Vauclain, of the Baldwin Works, said to me, "We are always looking out for men who can be promoted. And they know it. Boys will stay all night to finish a job." And in reply to a suggestion that ceaseless absorption in shopwork meant loss of mental energy—"No time for thinking? Why, if a man sits down at a table to invent, he'll spend all his time and money in useless patent rights."

The method, entailing almost universally beginning very low down, is illustrated by the system of the general manager of a principal railway. The whole of his "operating" department is filled by men beginning as "track apprentices," receiving at first 9 dols. (37s. 6d.) weekly. They are promoted to gauger, foreman,

and so up to the highest posts. All subordinate positions in the engineering department are filled by these men. "I call it my sieve," he said; "directors' sons, university men—all classes start here together. The drudgery keeps out the man I don't want: the man I do want can rise quickly, and knows the work from the beginning." His experience was that he got few university men under the system, for they would not stand the drudgery. But this was in the West, where there are fewer such men and more available posts. In the East, the university men would take such terms.

7. *University Results.*—Of the importance of university training in commercial as well as in professional life, I shall only give a few examples. Its value is determined as much by the attitude of employers as by its direct benefits. Mr. Roosevelt has said that it is not until he is over 30 that a man finds the full advantage over his fellows which a university education has bequeathed. A student I met at Pennsylvania University found it earlier. He was a man with ample opportunity, who, knowing that he must always start at the bottom, went on a railway at 18 to save time. After eight months' work, including promotion, he decided that his chance of high position was hopeless in competition with the university men—not through their prestige, but through their knowledge. He came back again for his four years at the university. In America you cannot waste four years more efficiently than by not going to a university. The same is true in England, but for reasons of general culture, not of commercial success.

The gentleman I have quoted before, because his enthusiasm for education is comparatively mild, owned that when the university man would fulfil requirements there was no comparison. "A time comes—after five years," he said, "when the high school man finds his limitations—till then he is ahead. But, after that, the college man scores by his deeper knowledge and wider outlook. Up to a certain point in life the common school is all right. It is not that I do not value college training—I want it. But that I find often that the man who has had it won't undergo the manual drudgery, whose place it can't take."

On one of the best-managed and most prosperous railways by a recent regulation every man to be eligible for promotion must have a university or engineering degree. Of 118 engineers in the employ of the Rapid Transit Board of New York, 100 (84·7 per cent.) are "college" men. Of their 75 axemen and rodmen 44 (58·6 per cent.) are college. So that of their total engineering staff 74·6 per cent. are men with some kind of college or university qualification.

C.—The Employer.

1. *Education and Character.*—At present a large number of the chief manufacturers, merchants, and commercial magnates are self-made men. The very recent development of facilities for higher education alone is almost an adequate explanation. Also pioneer work demands personal rather than acquired qualities. And since commercial success is the most envied career, it is often the case that such high natural capacity has been necessary for its attainment as would succeed under any disadvantages. Apart from those exceptional cases which occur under any conditions, it is a general opinion that the self-made rich man, in the sense of the man lacking direct systematic education, will have disappeared by the next generation.

At present we have no statistics as to the education of the great majority of successful employers. It is the mass, not the notable instance, that is valuable to a country; and commercial notoriety means speculative effrontery as often as legitimate enterprise.

In certain broad characteristics the average United States employer compares favourably with the English in the race for industrial success. His ambition is ceaseless, inexhaustible, and commercial. Politics is not, save to a very few, an ambition at all, but a poorly paid and unfashionable trade. Commerce itself is an occupation of high prestige—commercial achievement the universal idol. Idling is not only despised but dull, since there is no one of interest with whom to do nothing. So personal pleasure and social ambition both point to work, and he takes his work with him to dinner, theatre, and bed. Success leads him not to buy land, "found a family," and send his son into the Service, but to extend his operations and educate his sons to develop them.

Of the pioneer spirit, he has had so rarely the chance to build on others' foundations that he regards himself as responsible architect of his own fortunes, capable of raising them to one design or to another. Novelty is a recommendation, not a conclusive objection, and he is quite ready to begin a new business if opportunity arises. Boundlessly self-confident, he will readily take risks; while the more precarious nature of enterprises in a new country, and the quicker progress, incline him to regard failure as less irrevocable.

His breadth of outlook takes all commerce for its province. His spirit of inquiry is not confined to introspective process. Often he goes abroad on his holidays, more often sends, to inspect and discover possibilities from every rival. One of our greatest obstacles is the conviction that we have nothing to learn abroad. I wish there were an euphemism for this, for I have to call it "insular prejudice." Do we notice here subordinates sent out with a roving commission of observation? This breadth is encouraged by his lavish use of statistics, lavishly supplied by Government and private statisticians—often he keeps his own.

Of his enterprise England need not seek illustrations. One method may be useful. In most Western and many Eastern towns are commercial clubs, affiliated to each other. They are at once business and social—it is much the same thing—and the Committee exploit the city. Chambers of commerce offer a parallel, but no chamber of commerce which I know of would pursue a manufacturer who was reported to be casting an eye on a rival town ten miles away, find him a site, smooth his path, procure him a bonus, and persuade him to build in their city. I know of one specific instance in which this was successfully done.

2. *Relations with Employed.*—In very many departments of labour the United States workman has discovered that the interests of capital and labour are the same. So he welcomes improvements in process and increases output more than the English workman does. The spirit of co-operation is general, and is due to the sense of equality and the attitude of employers. The latter is capable of imitation.

The attitude is of personal individual interest. I passed with Mr. Hulburd, president of the Elgin Company, through a stream of 2,750 employes going out to dinner. Women and men alike bowed and

smiled as he passed. We lunched in the works hotel with the heads of departments, in a hall where some 800 employés were dining. Several stopped him to speak, and in many instances he knew their names and circumstances. He told me that the majority would come to tell him of important personal events—when they intended to marry, and so on. In spite of the numbers and the skilled work and the modern spirit of the place, they seemed in the most matter of course way to look upon the president of the company as their natural friend and official adviser. Such a condition needs careful cultivation, and with many temperaments is impossible. But I have seen that it can be done, and done with gain, not loss, of dignity. The popular notion that respect is incompatible with affection is true only as a rule of natures for which affection is difficult and respect impossible.

The same attitude holds good elsewhere. Capital and labour may disagree, but they do it reasonably, as friends might. Everywhere one finds personal and individual interest and knowledge of the men among the employer and officers. It is this that makes promotion possible, that is the secret of big output and of successful dealing with trade unions. Again and again you find a strike ordered by a union refused by the men. For they have found and believe that employers wish them well, know their wants, and recognise that it is only by generous treatment and constant personal supervision that commercial success is attainable.

Willingness to discuss grievances has an important influence. The employer is always accessible, and is willing to disclose his methods and reasons far more than we are. In one factory a strike was averted by showing a small committee of those who demanded a 20 per cent. rise the profit sheet, and explaining with figures that a rise in the wages would mean a loss in working and a shut-down. The employer suggested that probably at the same piecework rate they could increase the output if they would. They owned it, but feared "equalising" (lowering rate as output increases). He promised them a stationary rate for a term of years; they withdrew their demands, resumed work, and the output increased immediately by 30 per cent. with corresponding profit to the men. It is not suggested that this course is always available, but since the whole problem of the manufacturer of to-day is how to increase his output, such an open and reasonable attitude must be of great assistance both to the management of the business and the actual financial results.

The workman is well housed, amused, and cared for. At Elgin some hundreds are boarded at three dollars weekly at the hotel run by the company, at a yearly loss of some hundreds of dollars, where are gymnasia and reading rooms, concerts and dances constantly. The employés can join an Aid Fund Society managed by their own representatives, paying 25 cents (12½d.) weekly, and the firm adding 50 per cent. The money is paid out to their own order in case of illness, etc. At this factory the working hours have been reduced from 12 to 11 and now to 9, and more work and better is obtained.

3. *Appreciation of Education.*—On this rests the possibility of successful commercial education. As no manufacturer in England would desire an employé without primary education, so none in America but wants high school education. This is a postulate,

granted and done with. Of course, they desire good thorough education up to 17 or 18, and they see that they get it.

Here is a whole world of difference, so plain and obvious, of such paramount importance, that it may in this note be utterly disregarded, and this apparently is England's attitude towards it. What I desire to emphasise here is their attitude towards the product of university education—whether they get what they want here, and whether they prefer it. In England the man of commerce does not love the 'varsity man. No, he owns that such have the right to try and prove that they have not succumbed to their education and are little the worse for it. Naturally he cannot afford to encourage their vagaries, but now and again personal reasons induce him to employ them, and he will be pleased as well as astounded if they prove competent.

The Pennsylvania Railway lately decreed that in future every promotable officer must bear a degree. The Baldwin Locomotive Works reports that generally speaking it is the "college men" (which includes technical as well as arts and science men) who become leading officers. Dean Penniman, of Pennsylvania University (1,600 undergraduates), says, "We have constant applications from all the big industries for our graduates—*e.g.*, from Cramp's Shipbuilding Yards, Pennsylvania Railroad, Westinghouse, Carnegie, Phoenix Iron Works. We can't supply men quickly enough. All technical course men are sure of positions immediately. For general commercial life we have similar continual applications for men from our school of finance and commerce. They must begin at as low as forty or fifty dollars a month, but they work up at once. We have no similar direct demand for arts course men, who more usually go to law, medicine, etc." Columbia University, indeed almost every university, technical or textile school, tells a similar story.

Not only are they wanted for their knowledge. Without any exception at all everyone testifies to their superior initiative, breadth of view, and eagerness. The only objections I have met at all are in a few districts where university men are less plentiful, and consequently are less willing to begin at the bottom on poor pay. This is unimportant; when demand notably exceeds supply, it is an economic law, not a personal idiosyncrasy, that wages rise.

The condition did not arise in a night. "It took 15 years," the son of the founder of a great technical institute said, "to persuade manufacturers of the value of our men. It was a long hard struggle. But they know it now."

By practical assistance to education also captains of industry show their view. Hardly a school but can show plant given by local manufacturers, prizes offered. At Chicago a large firm of security dealers gave a good position as a prize for an essay on "Economics of Finance." The universities and schools are almost invariably begun and carried on from endowments of commercial magnates. A constant stream of money flows from industry to education, because the recognition is universal that thus the power will be returned multiplied. It is easier to get money for buildings than general funds, for this is human nature, but no want of any magnitude can be proved anywhere without a certainty of financial response. One of the latest gifts—the two million dollars of Mr. Joseph Pulitzer—to establish a school of journalism

in Columbia University, New York, admirably illustrates the spirit. It was made to Columbia as a city college after consultation with President Eliot of Harvard. The suggestion was Mr. Pulitzer's own, and as a great journalist his attitude on the question is of immense significance.

The character of the professors is both cause and effect. Men like Mr. Murray Butler, of Columbia, and of Mr. Harper, of Chicago, —to choose examples at random—might, it seems, be railway kings were they not university presidents. The practical, not the scholarly, tone is apparent constantly, and no one will suggest that scholarship suffers. Such men are the advisers of statesmen and the allies of industry as well as the friends of undergraduates and the mainstay of education.

D.—Management.

1. *Trade Unions.*—I shall only mention a few relevant facts. The danger and damage of tyrannical unionism is minimised by four circumstances: the less complete and more local organisation; the workman's more individual and less docile attitude; his friendly relations with employers; his personal ambition, which leads to high pressure and big output. Certain trades, such as building and plumbing, which everywhere seem forward in harmful practices, have great power and use it to the full. And the trade union spectre is taking full shape, and menacing every department of industry. But at present in one big factory after another one finds no fear and no sad experience. Their recipe in every case is good wages and pleasant relations. On these they successfully stake their whole cast, though one can find grim stories of long fierce fights. The secret surveillance of walking delegates is a source of suspicion and constant irritation.

Employers often refuse to recognise the unions, but they will always argue with them. And these open discussions, sometimes carried on day after day for weeks, give full play to the influence of good feeling and the remembrance of fair treatment in the past. The men are not so strongly bound to their unions, and the leaven of the highly-educated tends to a reasonable attitude. In one large manufactory, where the hours and price of work would seem abnormal to us, I was told that many men belonged to unions, but chiefly in case of sickness or loss of employment—the original conception of a provident society. "But they don't care about its being known. They know we treat and pay them well, and that they can rise, and when they come to us they put their cards in their pocket." Independent inquiries confirmed this statement: similar conditions prevail sometimes in England, but not, I think, to the same extent.

The comparative non-interference of the unions in apprenticeship and education is of immense benefit. It may be noted that the enemies of labour methods are accustomed to point to the condition of England as an "awful warning" of the danger of unchecked trade unionism.

2. *Labour and Wages Schemes.*—The experimental fecundity of America is exercised here as well as in education. Gain-sharing systems, premium systems, differential rate systems of all kinds are in operation at individual works. Many are highly ingenious, some have even met with some success. But, to my mind, none can be thought of for general adoption in the present state of

civilisation. Simplicity, even with inefficiency, will continue to reign. Admirable results are obtained by common piecework with some guarantee against equalising by employers. An understanding that piece rates shall be re-adjusted only at definite intervals has proved of value. And if by improvements or energy the production does rise unexpectedly, since by increased production come the best profits, employers may well support the inequality until the agreed occasion of revision.

"Boss" and "contract" systems are often in operation; the latter is particularly open to the abuse of piece-rate cutting. The boss is usually of a high type, his surveillance encourages zeal and often *esprit de corps* in his section. Suspicion is sometimes fostered by so much watching.

The employment of specialists in organisation and management is favoured.

The prevalence of wage schemes illustrates the experimental attitude of employers, who are willing to try new schemes at considerable cost, and the argumentative attitude of the men, who will often assist the attempt, frequently with no regard to their union's views.

In the Baldwin Works the piece price has not been changed for some years, and the man gets the advantage of constantly improved plant and process. If a workman is paid a dollar a-piece for piston-rods when he turns out 20 a week, he receives 40dols. if he can suggest improvements by which he makes 40. Employers take their profit out of the increased output, recognising the comparative and increasing unimportance of wages.

3. *Apprenticeship*.—"At any rate, I won't be bothered with article pupils or any pupils in my office. If he's useful I'll pay him what he's worth. If he's not, he's only in the way here." In law, in engineering, in every profession, the article clerk has almost disappeared. Men recognise that under modern conditions it is almost always unfair to one side. The employer fit to teach has no time to do so.

In apprenticeship schemes labour unions interfere comparatively little, and the resulting gain is great. A suitable boy, whether from the common school, the high school, or the college, can earn his living while he learns his trade. The matter is of such importance that I will summarise the Baldwin Locomotive Works apprenticeship regulations, some modification of which occurs with increasing frequency. Three classes of apprentices are recognised, distinguished by educational qualifications. Class I. includes boys of 17 with a "good common school education" bound to serve for four years, and during the first three to attend night schools for elementary algebra, geometry, and mechanical drawing. Class II. must have an advanced grammar or high school training, with mathematics. They are bound for three years, with mechanical drawing in night schools for two. Class III. includes graduates of colleges or technical schools, over 21, who have taken higher mathematics and natural sciences and desire instruction in practical shop work. They are bound for two years. The rates of pay are as follow:—

	1st Year.		2nd Year.		3rd Year.		4th Year.	
	s.	d.	s.	d.	s.	d.	s.	d.
Class I., per week ...	11	3	15	9	20	3	24	9
" II., " ...	15	9	20	3	24	9	—	—
" III., " ...	32	9	42	9	—	—	—	—

Apprentices of Class I. receive in addition a bonus of £25 and of Class II. £20 at the expiration of their terms.

Competent mechanics from each class find positions awaiting them the moment their indentures expire, sometimes even before. Mr. Alba Johnson, one of the partners, considers that the Class III. men, generally speaking, are the ones who become leading men—a strong testimony to the value of higher education in practical life.

Mr. A. F. Yarrow has established a similar system at his engineering works at Blackheath, with satisfactory results. The benefit to the apprentices is obvious, and it is believed that to the employer also it is of great advantage. A movement for uniform adoption of some such plan is now gaining ground among English engineers. The educational committee of the North-East Coast Institution of Engineers and Shipbuilders reported on these lines last December, and there is no reason but possible union objection why it should not extend to other trades. The importance of the principle in equalising opportunity and obtaining competent men can hardly be exaggerated.

4. "*Scrapping*."—This word suggests a whole attitude on a big question. Without exception the American manufacturer believes firmly in the economy of extravagance in plant, buildings, and organisation. He acts on the belief to an extent which keeps him for years in constant peril and often posts his name as a defaulter, for the best principle must be applied with discretion and a due sense of proportion; but in the great majority of cases the policy has been a conspicuous success as well to the particular industry as to trade in general. A demand for spacious buildings, extended markets, and the latest machinery is at once an indication of present prosperity and of future appreciation.

Opinion there universally condemns the conservative attitude of English manufacturers and their complacency in established methods. A Chicago engineer, who can speak with great authority by reason of experience, position, and cosmopolitan knowledge, says that in this matter England is behind all the other leading industrial countries from her "insular prejudice" and refusal to inquire or change. A few years ago, he told me, he was visiting the works of a large manufacturing engineer in England (this is his method of spending his holiday each year) who, pointing proudly, said with infinite satisfaction, "There's an engine that's been running 75 years, and it's going as well as ever to-day." My acquaintance gave his view that this particular machine was never a conspicuously efficient pattern, but in any case elsewhere it has been superseded, not once, but several times. Every revolution, he said, meant a loss of potential output.

I came across a biscuit factory where the whole recently-erected stamping plant was scrapped without hesitation for one that would stamp ten biscuits at a stroke instead of eight. Another manufacturer is tearing down the greater part of his factory to rebuild it in a fireproof pattern at a cost of £65,000. "Surely insurance would be cheaper?" I asked. "But where would my profits be while my machinery was being replaced?" was the answer; "and whose would my market be when I was ready to resume?"

Instances can be multiplied indefinitely of costly machinery barely in running order going to the scrap heap to make room for the latest invention. No doubt the habit is part of a general

financial attitude with disadvantages of risk and instability, but the line should be drawn very much nearer their policy of adventure than ours of timidity.

A period of depression closely following expansion may always seem to justify security at all costs—in the 18 months ending in June, 1894, one quarter in capitalisation and in mileage of the entire railway system of the United States came by petitions of creditors into the hands of the courts. But security may be dearly purchased, and where competition is keen and markets close present sacrifice is essential to future prosperity, and it is the adventurous policy which will restore, retain, or induce industrial ascendancy in any country.

5. *Political Influences.*—Politics in England take some account of commerce. In the United States commerce as it were in charity takes a variable interest in politics. Government statistics are available freely and lavishly. The policy has never commended itself for the Departments to acquire proficiency in the compilation of information of the first importance and to consign the result to the oblivion of inaccessibility, save with research and at a price. The influence of this stream of information on industrial leaders is very marked in broadening their outlook and suggesting new spheres of activity. Speculation is certainly encouraged thereby, but at least its data are reliable: private enterprise is assisted rather than checked, for unofficial statisticians found their calculations on Government matter, and could not themselves obtain the information which is furnished with surprising readiness. English manufacturers would, I am glad to say, refuse to answer the searching queries of the Manufacturing Census. But this is a question of degree only.

Consular reports are similarly accessible, useful, and unconventional. The methods are open to abuse: the practice of a Consul sending to a manufacturer information as to the local reception of his goods and advice leads sometimes to (politically) improper proceedings. Consuls ought not to canvass for orders, and should be impartial to their country. But the United States practice is very effective from the commercial standpoint, and the free circulation of reports and information of all kinds might well be imitated.

Conclusions.

To imitate the spirit of a nation is a task we have neither the ability nor the desire to perform. England has her own spirit, her own traditions, and her peculiar circumstances. The organisation of bigness is not our ideal of commercial prosperity, nor democracy our means of political salvation. But when every day brings its example of the necessity for new methods and new opinions, it is time to consider novelty as a principle, even though with sorrow.

In methods of education, then, I do not think that we have much to imitate. Technical education should be adapted more directly to the requirements of the trade it serves, and should shorten materially and officially the period of apprenticeship. This is a matter for legislation, to which the obstacle is the attitude of trade unions, but much can be done, as something is being done, towards educating public opinion by private experiments and establishing a custom which may induce legislation or render it unnecessary. The movement should include the establishment of a system of paid apprentices on the lines of the Baldwin and Mr. Yarrow's scheme,

and by this means the premium apprentice will gradually be eliminated. I do not believe that in any profession the articulated clerk system can be advantageous under modern conditions in any but exceptional cases. The development of professional schools in and out of the universities is the appropriate means for its destruction.

In elementary and secondary schools our need is a change not so much in methods or curricula as in spirit. On our present lines there is room for great improvement in the development of an attitude of inquiry and of individuality. The importance of education up to 16 lies not in the acquisition of knowledge but in the formation of character, and a firmer recognition of this principle would tend to the modification of our examination system, by which greater freedom and less haste would be possible. To this end normal schools and training colleges should be increased, and more attention given in them to principles and less to methods of instruction. I do not think that in the majority of cases the undoubted benefits of manual training cannot as well be secured by other means, which entail less distraction from liberal studies.

I have no doubt that valuable results may be obtained from more emphasis on the national idea. "The day is happily gone by when anyone is allowed even to assume indifference about the Empire," but more instruction in the Imperial history and Constitution and in the elements of civics would tend to ally understanding with enthusiasm, and to substitute patriotism for Jingoism. Systematic attempts to assimilate alien immigrants, to induce them to become English in sentiment, would assist the solution of the problem.

Not by revolution but by development, it is essential that in universities the idea should command more than conventional assent that their education prepares for active as well as for reflective life. We can no longer afford to allow that their product should tend so often to the learned professions and not to commerce. American experience, whether in high schools or colleges, does nothing to impair the supremacy of classics as a formative influence. but it places alongside adequate economic, historical, and scientific courses, whose aim is to form character by the study of branches of knowledge having close relation to the student's ultimate career. To adapt means to ends, even the end of practical life, is not derogatory to education and should not pass the wit of educators. It is not entirely the fault of education that it is unappreciated. But appreciation is essential, and it must be recognised that commerce can no more afford to ignore the product of high education than can the Bar, or the School, or the Civil Service.

In facilities for education the United States has accepted the consequences of democracy. High school education is free; to work one's way through the university a task simplified and comparatively easy. In many cases the system is of immense advantage to the country, and equality of opportunity is a sentiment which appeals to everyone. But United States conditions are very different from ours, and I for one am not prepared to say that such a system, were it feasible, is desirable for England at present. We have yet to see how America is going to deal with the problem of the half-educated. England is old, and crowded; she has much work to be done which demands no high standard of attainment, and many persons available for every position. However ardently we may desire equality of opportunity, however sincerely we may admire the theoretical equity of American methods, we in our different circumstances

may revolve with advantage how far we can afford to sacrifice collective efficiency to distributive justice.

If, then, it is neither that we are notably behindhand in methods of instruction, nor conspicuously deficient in facilities for education, in what consists such industrial advantage of the United States as is referable to personal qualities? It is the attitude of the people, and especially of the manufacturers and employers, towards commerce, towards employés, and towards education.

If English manufacturers are to succeed they must look on commerce with a less supercilious gaze. They must learn that the last word was not said years ago, nor the latest word in England at all. They must anxiously consider the progress of the whole world, not only give theoretical adherence to this doctrine of inquiry, but take practical, costly, and continuous steps to inquire at home and abroad. In their methods they must learn the economy of extravagance, nor rest from the ambition of extension. It is not enough that a man should make a business serve his bread and butter ends. To serve his country as well as himself he must believe in his commerce, give himself to its interests, desire neither cessation nor slackening till he has seen his sons using the advantages of his wealth, not to enter society but to work successfully, not to sell the business and retire, but to develop the ideal of commerce.

And many of them must change their attitude towards their men. This is said not from a social or sentimental but a financial standpoint. The reward of exertions in the establishment of personal relations is incalculable. To watch, and pay others to watch and report progress and ability, not only procures good men, not only stimulates energy and increases output, but makes possible the practice of insisting that men of education and position shall begin low. If promotion is an affair of merit, we shall have fewer incompetents near the top, more competents anxious to begin near the bottom, and more efficient throughout.

They must also realise that in high positions the highest education is essential. The prejudice among employers against university men must be replaced by a recognition that outlook and knowledge are more valuable in subordinates than book-keeping and letterpressing. University men will soon be as willing here as in America to begin low, when they have a similar prospect of rapid promotion. In these matters it is demand that regulates supply, and when once our manufacturers realise that it is among university men that they must seek their subordinates if they desire to hold their own in industrial competition they can dictate terms as to the qualifications which they desire. I do not believe these qualifications will be found to differ materially from those possessed to-day, but until the integral connection is realised between the highest education and industrial success employers cannot demand any modification. It is from them that the impetus should come. Enterprise and initiative are their peculiar province.

England is now competing with American commerce in the making. In the next generation our manufacturers will meet trained men, adding culture to their enterprise and knowledge to their ambition. What shall we do? For the product of American universities is a young man who, looking to the past with the respect of an inheritor, looks to the future with the confidence of a possessor, and is likely to be found shrewd in conception and swift in execution by those who unprepared go forth against him.

II.—LEGAL EDUCATION.

"The law," Burke wrote, "is a science which does more to quicken and invigorate the understanding than all other kinds of learning put together." The great number of persons in the United States who take a degree in law with no direct intention of practising testifies to an agreement. The difficulty of teaching law, which differs substantially in different States, necessitates that its study should be scientific, that principles should be exalted, applications treated as illustrations and not as substantive rules. Consequently all the principal schools aim to induce rather a wide knowledge of abiding principles than a minute proficiency in ephemeral practice. In many schools courses in allied subjects, *e.g.*, economics, ethics, politics, are popular, and though more emphasis is laid at Oxford on jurisprudence and speculative topics as substantive subjects, yet American instruction is applied so systematically to fundamentals as to produce little loss in the educational value of the training.

Even more obtrusively American law schools are professional schools. Graduation in some States entitles to admission to practice *de cursu*, in others the statutory examination is unimportant. The branches are undivided, a circumstance of great assistance to the young lawyer, though not, I think, an advantage to the law or to the client. Everywhere admission in itself is cheap, and huge numbers qualify, *e.g.*, the State University of Michigan has 900 law students; Harvard, 650; Yale, 350. The growth of demand is evidenced in the University of Chicago, whose law school has existed only some three years (and contains now 96 students), but which has erected a new law building to accommodate 500, with space reserved to double the size, and a library of some 20,000 volumes. Graduation implies fitness for practice everywhere, and a notable instance of the public respect for systematic education is shown by the phenomenon, strange to us, that a distinguished law school career is of direct professional advantage. The benefit of reading in chambers or service as articled clerk in a solicitor's office is perhaps undervalued, but in modern conditions it is impossible to doubt that, except under exceptional circumstances, the systematic three years' instruction in such schools is infinitely more valuable than any combination of reading and office work practicable within that time. Three years is little enough to gain a scientific knowledge of law adequate for professional purposes even with no distraction, and when the training is practical fulfils all the requirements of the student. In almost all States the articled clerk disappeared some years ago.

The atmosphere of legal thought among the students is notable. Their moot courts and law clubs are conducted with perfect seriousness, and almost invariably the law school is spoken of as an example of keenness to the university. Professional proficiency and success is the inducement, for little emphasis is laid on examinations, which are applied rather as periodic tests of progress than as intrinsically important. The schools are graduate (as Harvard) or undergraduate (as Michigan). Previous graduation in arts is very usual even when not required. It is because there is a public opinion for and professional advantage in high education that so many take two courses, to the great advantage of all concerned.

The effects of the system will not be apparent for years. But they may be looked to with confidence to counteract the tendency to prolixity and inaccuracy often apparent in American advocacy, and the neglect of etiquette and consequent loss in dignity sometimes noticeable. The court, *e.g.*, of His Honour Judge Elliott, of Minnesota, is an example of admirable legal decorum and of the possibilities of personal influence by judges imbued with legal reverence by these methods.

The methods of instruction are two: the English system of text-books and lectures, and the "case" system, pure or modified. The latter was inaugurated by Harvard, and was regarded as an innovation so dangerous that the Boston Law School was started by the practising lawyers of the city, and at first drew off more than half the Harvard men. Since that date the new method has consistently gained ground, and was finally vindicated recently, when the Boston School, in self-preservation, adopted the system it was formed to oppose.

Yale and a few other schools cling to English methods, but for practical purposes it may be said that the "case" system is that of the United States.

The word is used only for convenience, but as the method is distinctive it is difficult to appreciate the American objection to its employment. The student, absolutely ignorant of law, is set down to a collection of cases, *e.g.*, on contract, made by the professor and arranged in topics chronologically. There is no head-note or excursus. In every subject the same method is employed, the cases being selected, not for intrinsic authority but to illustrate the growth of principles. In this way admirable collections have been made, such as Professor Ames' (of Harvard) on Trusts and Professor Kirchwey's (of Columbia) on Mortgages.

The student prepares a certain number of cases, endeavouring to discover their meaning, and assisting his preparation by reference to text-books. In class the professor calls on someone to give a verbal synopsis of the case. Discussion follows, the professor calling on various students, and endeavouring to elicit all the law which the case can suggest. Classes are large, few can take active part in any one, but the constant question and answer and the necessity for personal thought keep interest keen. A wonderful amount of law is evolved from an apparently unfertile example, and principles so dug out leave an almost ineffaceable impression. It is in this system that the American student finds his substitute for work in chambers.

The personal qualities demanded from the teacher are very high. "Some one's bound to be tired after a class," said Professor Ames; "if it isn't the teacher, it's the students." Applied to some branches this catechetical method is exceedingly difficult; it is, of course, impossible to hurry on; the full course must be taken to pursue the method over all the essential subjects. In exceptional cases brilliance may be retarded, but for the mass nothing can be conceived more stimulating or a more valuable professional training.

These two points must be emphasised when any question arises of application to England: That the catechetical system is only practicable when three years are devoted exclusively to law, and when professional success is substituted for examination success as the goal in the mind of teacher and taught.

It is believed that a drawback to the "case" system pure is the possibility of legal disgust in the mind of the novice set down to the

study of apparently insignificant illustrations, and the loss of time consequent on an insufficient grasp of elementary facts of legal procedure and coherency. In most law schools Harvard methods have been modified after adoption by a preliminary course of lectures and reading in legal principles and practice. Time is saved, and a true conception results more easily, I think, in this way.

The "elective system," though practically universal, is not in law of much practical importance. The time is so short and the necessary courses so many that the student's choice is confined within small limits. Specialisation is, however, assisted materially thereby.

Practice courts at many schools receive much prominence. The system has been most fully developed at Michigan by Professor Hutchins and Professor Bogle, where, in one course, transactions previously arranged by the professor are conducted by students in such a manner as to leave doubtful both facts and law. There is advice on evidence, delivery of pleadings, and trial in due form. It is certainly the fact that throughout exists gravity and seriousness. Personally I should be inclined to call the elaboration a disproportionate expenditure of time, but students certainly acquire thereby a minute knowledge of procedure. Similar practical methods are in use for conveyancing.

Moot clubs, study clubs, and law clubs exist in connection with almost every school. Their value is great. The student breathes an atmosphere of law which induces all the keenness that tradition and opinion arrogate to it.

The arrangement of subjects calls for no special remark. To grade them to some extent is usual, *e.g.*, contracts come early and trusts late. But these matters are of relative unimportance, though considerable ingenuity is shown in the combinations of courses.

My cordial thanks are due to the lawyers whom I have named, to His Honour Judge Greenbaum, of New York, Professor Woolsey, of Yale, Professor Hutchins, of North-Western, Professor Hall, of Chicago, Professor Pattee, of Minnesota, and to many other gentlemen who have courteously and readily informed and assisted me.

In the United States there are very many universities, almost all with a law school. In addition, there are public or private law schools of size in all the large towns. The revival of law in England is only recent, and now a very little is being done. Our provincial law students' societies are often admirable. But it is not well that students should have to work out their salvation quite alone, and be unable, usually, to obtain any systematic legal instruction. The Law Society's scheme just started is a forward step, but shows little sign, and, indeed, is constitutionally unable, to go far in the direction of providing thorough and scientific legal education. That is not within its scope under present conditions.

It is to the £120,000 in the hands of the Attorney-General and to the schemes of the University of London that I wish to direct the results of American experience. The lectures of the Inns of Court are no doubt intrinsically valuable and capably conducted. But as legal education they are not merely useless but damaging, for they create the impression that by them bar students are fitted for their profession. Their effect is to lull the legal conscience of those responsible for providing legal education and of those desirous of receiving it. They suggest incompletely trains of thought which followed lead to success at bar examinations. To these examinations they are directed, and a thoughtful mind may discern in them

“a collateral relationship” to legal education. But for the average student they are neither systematic nor adequate, and in effect misleading. From the English bar and the Council of Legal Education some better thing is expected.

To my mind, the American system, recognised as the most adequate invented for teaching law as a profession, suggests the following course, which I respectfully submit for their consideration: A central school of law should be established in London, with a minimum three years’ course, conducted by professors who have been successful practising lawyers and possess, in addition, suitable scholarly qualifications. Daily attendance should be demanded similar to that at Oxford and Cambridge, examinations held frequently (say, three times a year), and a degree granted on the results of all previous examinations. The instruction should be in scientific law, but adapted to professional standards. The standard of admission should be that of an entrance scholarship examination at Oxford, with a liberal choice of subjects, and the aim to combine education with professional efficiency—an efficiency which should include scientific as well as practical knowledge of law.

Graduates could suitably but not necessarily be excused all bar or Law Society’s examinations precedent to the final. Other conditions for a call to the bar need in no particular be changed, nor would the Inns of Court forfeit any control over their members. Students attending the school and intending to become solicitors should count their three years of attendance against that period of their articles. The entrance examination should have the effect of matriculation at London University in reducing the articles by a year. Consequently, a graduate would have but one year’s articles to serve subsequently. To a certain extent, the later courses should be elective, so as to provide for Imperial as well as English needs.

Fees should be as low as possible, and no residential qualification be demanded. Adequate reference and lending libraries for the use of both teachers and students should be provided. The lending portion is the more important, as the Inns of Court and the Law Society’s libraries are available for their members.

The constitution of the school would be regulated by the financial considerations of its inauguration. But that the Inns of Court, the Law Society, London University, and the Clifford’s Inn Trustees could not provide or procure adequate funds for the purpose of a beginning is incredible; that these bodies, proud as they may be of their traditions and responsibilities, would not be too proud to deny satisfaction to the great need that exists is, to my mind, certain. A joint board of trustees, a joint council supervising the operations of the faculty, is an idea not too subtle to assume practical form from a display of legal ingenuity far less profound than is required to prove its impossibility.

Considering the example of America in systematic instruction, the conjunction of opportunities now awaiting seizure, the concourse arrived or available of eager students from every part of the Empire, some step must surely be taken. The importance, national and international, of scientific legal education can hardly be exaggerated. It fortifies the Empire by the spread of political knowledge. It induces international amity by the advancement of fundamental aims. It will do more to promote these ends than a hundred treaties. By substantial unity of ideal, not by irrelevant divergences of practice, we may best measure the possibilities of intelligent national co-operation.

W. P. GROSER.

Mosely Educational Commission.

Report of Alderman JOSEPH R. HEAPE, Vice-Chairman of the Education Committee, and Chairman of the Technical School Sub-Committee, Rochdale.

No one can make even a cursory examination of the educational systems of the United States of America without vividly realising one fundamental fact which renders possible all the admirable work that is being done, namely, the profound belief in the value and importance of education. This belief exists in every section of the community. Parents are willing to make great sacrifices to keep their children at high schools; youths will undertake any kind of employment to earn money to keep themselves at technical colleges and universities. Men of means seem to rejoice in opportunities for providing buildings, equipment, endowments, anything that will further education, and millionaires vie with each other in the liberality of their gifts. In the year 1901 no less a sum than £3,608,082 was given towards the purposes of higher education in the United States.

What is the exact relation of this to the country's present industrial and commercial activity and success? How far is this spirit and the educational system of the Eastern and Middle Western States the cause of this industrial prosperity, or how far is it the result?

Until comparatively recent years, education other than elementary has not been widespread. In 1860 there were about 40 public high schools in the States, in 1870 there were 160; in 1880, 800; in 1890, 2,526; and now there are 6,005, with 560,000 pupils enrolled. Including private schools, there are now some 750,000 scholars in attendance from 12 years of age and upwards. The students in secondary schools are increasing five times as fast as the population.

The rapid increase in the number of these schools is largely due to the attention which is being given to the adjustment of education to commerce and industry. More and more the curricula of these institutions are being adapted to prepare students not only for the ordinary avocations of life, but for entrance to technical institutes, colleges, and universities, where specialised training can be pursued. And these latter institutions, in addition to providing the ordinary culture studies, have a very definite regard for the claims that industry and commerce make upon them. It is a very striking fact that in 1880, 50 per cent. of the population were engaged in agriculture; in 1890 the proportion was only 39 per cent.

Undoubtedly, the present provision of educational facilities is a result of modern developments, however far it may have been also a cause. But probably both the industrial success and the educational provision in the States referred to above are largely due to the inherited characteristics of the early colonisers and the character they developed in their pioneer struggles.

In the United States colonisation has approximately followed parallels of latitude from east to west. The present chief centres of industrial and commercial activity lie west of the New England States and of New York. The influence that has radiated from the descendants of the Pilgrim Fathers and the Puritans has counted for very much in all that is best in the United States, and is still a living power. The descendants of these men, with the adventurous spirits who followed them, and with the English and Dutch who colonised New York, had difficulties to encounter in dealing with the Indians, in providing for the necessities of life in food, shelter, clothing, etc., incidental to a new colony; contact with these difficulties developed in a sterling stock qualities that have had much to do with the progress of the United States. The independence, self-reliance, resourcefulness, inventiveness, and enterprise, which have created the position of to-day, result, it can hardly be doubted, very largely from these causes.

In the States there is a wonderful sequence of educational facilities placed within the reach of every child, leading from the primary school to the university, and, excepting in the highest stages, entirely free. The provision would be useless were there not the eagerness of the people to avail themselves of it. But this does exist, and steadily increases. There is now the additional stimulus of assured success to those who persevere. So vast are the natural resources of the Continent, so rapid their development, and so great the consequent industrial progress, that situations of importance leading to positions of responsibility await practically every graduate of a technical college, and to a large extent also of a university, whilst those who leave the high schools to begin work find that the longer they have remained at the school the better is their chance of success. It is quite usual to be told by the professors at the technical colleges, especially those of mechanical and electrical engineering, that they have, at least, three applications for each of their students who leave on graduating. It is now becoming general for employers engaged in distribution as well as production to insist upon evidence of considerable educational attainment before admitting youths into their employment.

At the Baldwin Locomotive Works in Philadelphia (where over 18,000 men are employed), the greatest emphasis is placed upon the importance of apprentices receiving the best possible education before going to them. They take apprentices at 17 for four years who must have had "a good common-school education"; they are required "to attend such night schools during the first three years of their apprenticeship as will teach them in the first year elementary algebra and geometry, and in the remaining two years the rudiments of mechanical drawing." An apprentice of the second class "must have had an advanced grammar school or high school training, including the mathematical courses usual in such schools. He must bind himself to serve for three years, and to attend night schools for the study of mechanical drawing at least two years, unless he has already sufficiently acquired the art." There is also a third class of apprentices, in relation to whom it is stated: "The third-class indenture is in the form of an agreement made with persons 21 years of age or over, who are graduates of colleges, technical schools, and scientific institutions, having taken courses covering the higher mathematics and the natural sciences, and who desire to secure instruction in practical shopwork." The firm is willing to take men

of the third class up to 24 years of age. In Chicago the Bricklayers and Masons' Union have for four years required a considerable basis of educational attainment from those who seek to be apprenticed at 16. It is afterwards compulsory upon them to attend a special school five days each week for three months in the year, January, February, and March, to receive a specialised education in mathematics, mechanical drawing, English, and the construction of language. In fact, it seems to be a generally accepted axiom that educational preparation is necessary to success, and conversely that, given the preparation, success is assured.

The American youth is possessed with an intense desire to succeed, the atmosphere surrounding him is surcharged with a spirit of activity and a tradition of work, and hence there is no wonder that the institutions giving advanced and specialised education are thronged with earnest, hardworking students. There can be no doubt but that all this is telling most forcefully in furthering the industrial and commercial development of the country. And adding to this, the marvellous natural resources of the continent, and the climate which during the greater part of the year seems to stimulate to active exertion, there exists a condition of things highly conducive to material prosperity, and one from which England may well draw the lessons that it teaches, or rather obey the mandates that it issues.

England is notoriously behind many other countries in fixing a shorter school life as compulsory upon children. Here a child may leave school at 13 years of age, or, upon proof of attainments in no way extraordinary, may leave at 12. In eight of the United States attendance is compulsory up to 16 years of age, in three up to 15, in 18 up to 14, and in only one is it fixed as low as 13. When the official return was compiled it was stated that in 14 States there was no legislative enactment, and five had furnished no information. In Germany the age of compulsory attendance is also higher than in England, and in addition to the stimulus of industrial success and the appreciation of scientific attainments as in America, a further inducement to going through a course at a secondary school up to at least 16 years of age is provided in the exemption which such attendance procures from one year of military service. There is also the fact that the State is a large employer (not only the army but also the railways and the mines being under the Government), and as high educational attainments are required for all the better positions, this has exercised a stimulating effect upon higher education. Until, or unless, legal enactment in England compels an extension of the period of school age, inducements leading to conviction of its value can alone be utilised as motive forces.

Two complaints are frequently made of the results of the education given in the elementary schools in England. One is that boys on beginning work at 13 and 14 have no self-reliance, no originality, are unable to devise methods of doing even the simplest things to which they have not been accustomed: seem to be inert receptacles into which information has been poured, rather than living organisms, which, having digested suitable food, are stimulated into activity. The other complaint is that the average boy is wishful to leave school at the earliest possible moment (a wish too generally shared by the parents), and has no desire whatever to prolong his education, or for mental self-improvement in any way.

Whatever there is of truth in these indictments points to faults in the system which produces such results. Many causes doubtless contribute, amongst them being the still lingering influence of the baneful methods which were necessitated by the system of payment by results now happily abolished. These led to cramming instead of encouraging healthy methods of quiet, unhurried, and systematic training.

In the earlier decades of the last century England occupied a peculiarly advantageous position in relation to industrial development. The steam engine had been invented here, as had also the mule and stationary spinning frames. These, with other collateral inventions, had led to the organisation of the factory system, and to remarkable strides being made in the cotton and other textile industries. The juxtaposition of the beds of coal and iron ore, the inventions of Bessemer and Gilchrist and Thomas, and the attention given to all branches of engineering, had also resulted in extraordinary progress being made. The nations on the continent of Europe had been impoverished, their resources squandered, and their energies dissipated by a long series of devastating wars. When, sufficiently recovered from the effects of this disastrous period, they turned their attention to manufacturing industry, they found themselves face to face with a full-grown industrial development already existing in England. This country was, in fact, easily first and the rest nowhere. For a long time England held this supremacy without much effort, the characteristics of her people, the climate of the Northern Counties where these industries were principally located and had been actively pursued for a considerable time, gave her advantages that kept her a long way in advance of those countries who sought to become her rivals. Early in the nineteenth century Germany began to attack the problem from the educational and scientific side. By laws dealing with education in elementary day and evening schools, by fixing the period of compulsory attendance much higher than in England, by making far-seeing provision for scientific and technological teaching in technical schools, by using the resources of the State to develop the nation's economic strength, and by an alert readiness to assist, in any way, the furthering of those industrial interests, Germany has forged ahead, and to-day occupies a strongly entrenched position.

America is taking much the same course. In the most prosperous parts of the United States the compulsory attendance of children at school covers a longer period than in England, while the extensive provision of high schools for secondary education and the remarkable increase in their number within the last few years bear witness to the importance that is attached to this educational foundation as absolutely necessary to ultimate success. Splendid technical schools and colleges, frequently provided and maintained by private munificence, with large universities keenly alive to modern needs and offering at moderate fees abundant choice of studies, afford great facilities to the earnest student. The spirit of the people leads them to utilise these resources, and the various institutions are practically full of earnest, eager students.

Has England nothing to learn from all this? Her position is now neither unassailable nor unassailed. Her people are excelled by none in their splendid natural qualities and peculiar aptitude for manufacturing industry of all kinds. But even inherited aptitude

and traditional methods of manufacture will not now suffice; development proceeds apace, and no factor that makes for success can without danger be neglected. And can it be truthfully said that the education of the artisan, and of those who will be the leaders and directors in industrial undertakings, is not a factor of the utmost and the gravest importance? And does it not, therefore, follow that if we neglect to make this provision, and to do our utmost to bring our people to avail themselves of it, we are not giving them fair play, but are deliberately handicapping ourselves in a race which is vital to our very existence?

The rapid survey of some of the leading characteristics of American education in the North and Middle West, which it was alone possible for most of the members of the Mosely Commission to make, was still sufficient to show that great importance is attached, and that increasingly so, to the inclusion of educational handwork in the curricula of the schools, from the kindergarten up to the high school. This is a matter of great significance and importance. There is not now, especially in the cities and large towns, the close contact with the daily difficulties and practical problems which the early pioneers and their descendants were called upon to face, which resulted in their developing qualities which have gone for so much in the formation of American character, but a substitute is being found for this in placing the education of children upon the natural basis of dealing first with the concrete, of bringing them into touch with *things*, and then leading them to the abstract. This does not merely apply to the kindergarten and early stages of education, but it is continued in a rapidly increasing number of instances up to and through the high schools. There are also a number of extremely fine modern schools in which an elaborate equipment is provided and a great amount of time devoted to the subject; these are known as manual training high schools. If this is necessary or advisable in America, it is more so for England, where the qualities that this branch of education stimulates are just those in which we are lacking. The subject is not new in England; educational handwork is given in many kindergarten departments, manual training in woodwork is given in a number of the elementary schools, possibly some 15 per cent., and in a much smaller number there is some work in metal.

In the teaching of sewing and cookery to girls we are, as a rule, decidedly in advance of America. But in England there is a most deplorable gap so far as boys are concerned, between the kindergarten and the commencement of woodwork at 12 years of age; during this long interval there is very rarely any manipulation of material, and golden opportunities are lost.

In a short report like the present, it would be inadvisable to attempt to describe in detail the work done in the direction of educational handwork in the various schools visited. The most that can be attempted is to try to bring into relief a few salient points.

First as to kindergarten, all the teachers giving this instruction are specially trained. They go with extreme thoroughness into the work and lay an excellent foundation for the observation and manipulative work to follow. There are two schools of thought in the country as to methods, one adhering almost exclusively to Froebelian developments of gifts and occupations, the other using much of this material but in a freer way, emphasising building and constructive work.



A GIRLS' PUBLIC SCHOOL NEEDLEWORK CLASS.

In the grades immediately succeeding the kindergarten in very many schools most excellent methods are adopted, the lessons are made intensely interesting to the children, in whom a great amount of originality, self-reliance, and keenness for work is developed. It would be too much to say that all this is secured in the average school. The two pioneer institutions in educational matters are the "Teachers' College," in New York, and "The School of Education," under the general direction of Dr. John Dewey at Chicago, and it is in these institutions that are seen embodied the results of the most advanced thought on educational methods.

It is now accepted that the instincts of primitive man are reproduced, and that in a certain definite order, in a child. These instincts have an intense interest for him, and by judiciously utilising this interest, and letting him deal with elementary concrete facts such as faced his progenitors, a very valuable education is given to him.

Professor Richards, of Teachers' College, New York, in conversation, outlined the method something as follows: "We start with ideas of food, clothing, and shelter, facts which faced the race in primitive conditions. In the first grade* we deal largely with facts of the hunting and fishing stage; in the second grade with pastoral and agricultural stages; in the third with the period of trade and transportation. In each of these divisions we consider the facts that are material in the lives of these people; this means their tools, weapons, all forms of constructive activity, and the whole field of the arts grows out from these. We are dwelling more on the development of the Aryan race, and not on the American Indian whose development was arrested. We are pioneering the way, and have not thought out our ideas for adaptation to public schools."

This method is worked out in great detail in Dr. Dewey's school at the Chicago University. The school is an experimental one, in which Dr. Dewey has attempted to find out by trying—not alone by discussion and theorising—whether certain problems, such as the following, *may* be worked out, and *how* they may be worked out:—

"What can be done in the way of introducing subject-matter in history and science and art, that shall have a positive value and real significance in a child's own life; that shall represent, even to the youngest children, something worthy of attainment in skill or knowledge; as much so to the little pupil as are the studies of the high school or college student to him? You know what the traditional curriculum of the first few years is, even though many modifications have been made. Some statistics have been collected showing that 75 or 80 per cent. of the first three years of a child in school are spent upon the form—not the substance—of learning, the mastering of the symbols of reading, writing, and arithmetic. There is not much positive nutriment in this. Its purpose is important—is necessary—but it does not represent the same kind of increase in a child's intellectual and moral experience that is represented by positive truth of history and nature, or by added insight into reality and beauty. One thing, then, we wanted to find out is how much can be given a child that is really worth his while to get, in knowledge of the world about him, of the

* A grade means a year, and school life begins at 6.

forces in the world, of historical and social growth, and in capacity to express himself in a variety of artistic forms. From the strictly educational side this has been the chief problem of the school. It is along this line that we hope to make our chief contribution to education in general; we hope, that is, to work out and publish a positive body of subject-matter which may be generally available."

In the school "there are three main lines regularly pursued: (a) the shop work with wood and tools, (b) cookery work, and (c) work with textiles—sewing and weaving. The various kinds of work, carpentry, cookery, sewing, and weaving, are selected as involving different kinds of skill, and demanding different types of intellectual aptitude on the part of the child, and because they represent some of the most important activities of the everyday outside world; the question of living under shelter, of daily food and clothing, of the home, of personal movement and exchange of goods. He gets also the training of sense organs, of touch, of sight, and the ability to co-ordinate eye and hand. He gets healthy exercise; for the child demands a much larger amount of physical activity than the formal programme of the ordinary school permits. There is also a continual appeal to memory, to judgment in adapting ends to means, a training in habits of order, industry, and neatness in the care of the tools and utensils, and in doing things in a systematic instead of a haphazard way. Then, again, these practical occupations make a background, especially in the earlier groups, for the later studies. The children get a good deal of chemistry in connection with cookery, of number work and geometrical principles in carpentry, and a good deal of geography in connection with their theoretical work in weaving and sewing. History also comes in with the origin and growth of various inventions, and their effects upon social life and political organisation. The everyday work of the school shows that learning may, even with little children, lay hold upon the substance of truth that nourishes the spirit, and yet the forms of knowledge be observed and cultivated; and that growth may be genuine and thorough, and yet a delight."

Dr. Dewey aims at developing and educating the child through what he calls his fourfold interests, "the interest in conversation or communication; in inquiry, or finding out things; in making things, or construction; and in artistic expression: these are, we may say, the natural resources, the uninvested capital, upon the exercise of which depends the active growth of the child." The actual manipulation of material is made most interesting to the child. For instance, preparatory to weaving, raw wool is taken, carded in the primitive manner, spun in various ways, dyed by natural dyes which the children gather, and then woven either in small frames, or on a loom which they have constructed. Accompanying all this, very much is done on the art side, where modelling and drawing are looked upon as just as natural modes of expression to a child as is speech.

The school is an experimental one. Dr. Dewey says: "We do not expect to have other schools literally imitate what we do. A working model is not something to be copied; it is to afford demonstration of the feasibility of the principle, and of the methods which make it feasible." Striking proof was given to the writer of the success of Dr. Dewey's methods as proved by the positions that children who had gone through his course took when they went

forward to more advanced schools, and the progress they made there. Many of the methods used by him are employed more or less thoroughly in a large number of the schools in the States.

Instead of dealing with primitive man in a general sense, or the Aryan race, sometimes the American Indian is selected as a type; although his development did not reach the highest point, his nearness to the child, the products of his skill being almost always accessible, and the interest the Indians must always have for Americans, make him and his works a delightful study. Elsewhere, the story of Robinson Crusoe is utilised.

Especially is it noticeable how much use is made of drawing in the schools, not drawing looked upon as an irksome task from uninteresting and uninspiring flat copies, but drawing as a natural mode of expression of the child's thoughts. Nearly every classroom is surrounded by wall slates, and on these the scholars are accustomed to draw, frequently making sketches of the characters about whom they are reading, and of the incidents narrated. If they have been on an excursion with the teacher (a quite frequent occurrence), they sketch the objects that most impressed them; in numberless ways this mode of expression is cultivated. In many schools, much use is made of colour, and the brush is put into the child's hands before and in preference to the pencil. Nature-study is frequently an important item in the curriculum. By these means the power of accurate observation, which is so marked in young children, is cultivated, and the facility gained of its being recorded. It is a training in the co-ordination of eyes, brain, and hands of the utmost importance.

Much work on these lines is already being done in many English schools, but it seems to the writer to be well worth very full and careful consideration as to how far these methods can with advantage be more widely utilised here, especially for our public elementary schools. They certainly vivify the teaching, arouse the keenest interest in the child, stimulate his originality, call out his powers, increase his modes of expression, and, in addition to the actual knowledge acquired, a real lively interest in the work is gained, and this habit of earnest application is carried forward to the higher schools, provided that the curriculum of the latter affords scope for the continued development of the aptitudes thus formed in the earlier stages of training. There is another very valuable result. In working and finding out things for himself, a child is accustomed to refer to books placed freely within his reach, and he thus acquires a habit of the very greatest value. A few books of reference in each class-room and encouragement to use them are found a valuable instrument in education and in forming habits of self-improvement.

Not only is educational handwork of importance in the early years of school life, but it should be continued through all the grades up to and including the high school. Such, at any rate, is the modern American view. Although, at present, manual training is given in only about 25 per cent. of the schools, it is now recognised as of such educational value that it may be broadly said that provision for its teaching is being made in all new schools. Manual training in the ordinary sense of bench-work in wood was begun in America in 1880, when, through the efforts of Dr. Calvin A. Woodward, a manual training school was opened at St. Louis, in connection with the Washington University. The success of this

school led to the speedy organisation of similar schools in other large cities, in Chicago, Baltimore, and Toledo in 1884, in Philadelphia in 1885, and so on. In 1895 the Massachusetts Legislature, under the lead of the State Board of Education, made it obligatory upon every city in the State of 30,000 or more inhabitants to establish and maintain manual training in a high school. This has been one source from which manual training has spread, there has also been another, representing an opposite extreme of thought. It has grown from the kindergarten. The first source emphasised the utilitarian side, the other came purely as an educational idea. From the union of these two growths has resulted manual training as it is seen to-day in the States, not on the one hand entirely technical and utilitarian, nor on the other as distinctly educational as if it were wholly permeated with the spirit of the kindergarten. In the schools, therefore, one meets with great variety in the way in which the work is done: in some it consists very largely of the usual exercises and the making of the familiar joints, in some the Sloyd models are more or less carefully adhered to, but in the greater number the course is to a considerable extent arranged by the teacher. As a rule the drawing of each piece of work is insisted upon.

There is no doubt but that the influence of the spirit of the Sloyd system is altering the methods in the ordinary public schools, and there is a strong tendency, which seems to be increasing, to dwell much more on the artistic element in connection with the models made, to vary them from time to time, and to allow the pupils to design their own, within limits, and to decorate them. The making of articles of utility and ornament is very generally encouraged. In almost every school that was visited the manual training instructor was a teacher on the staff of the school. He sometimes, perhaps generally, taught the drawing in connection with the subject, but not infrequently this was taken in the school in the ordinary course, and the two teachers worked together.

There is no doubt but that some arrangement ought to exist under which the teacher of manual training is a recognised member of the staff of a school, the subject itself considered an integral part of the curriculum, and its educational value realised. It is claimed for truly educational handwork that it develops the physical, mental, and moral qualities. It is not so much a subject of instruction as a method. It calls out creative power, and the processes which are passed through, from the conception of a model in the mind to its first being embodied in a working drawing, then to its assuming permanent form in clay or wood, are each healthful, real educational developments of will power, accompanied by that keen sense of pleasure which comes from the act of construction. Manual training also develops individuality; handwork cannot be slurred over in chorus; it must really be done, each piece and process, under the teacher's eye. "We cannot do good handwork without sticking to honesty and truth; we cannot, in manual training, hide or equivocate, or slide over. The good work we do is there, plain for all to see"; the faults we have made stand out self-revealed, no outside judgment needs to be called in, and we stand by our own work, justified or condemned. Another most valuable result achieved by educational handwork is, that it not infrequently infuses new life into a child who is dull and who seems to be absolutely irresponsible to the usual educational stimulus of books. Brought

into contact with manual work, an aptitude for it is often discovered, the child feels that he is no longer a hopeless dullard, the butt of the class, and the despair of the teacher. He stands henceforth on another plane, and on an equality with his fellows, for if they can beat him with their heads, he can equal or beat them with his hands. To develop in him this self-respect is a gain of inestimable value. In this way a boy's interest is frequently caught and held, his general education is advanced, and he is retained longer in the school.

If, as is now urged, educational handwork should be taught generally in all schools, it is evident that the only absolutely defensible ground upon which it can be so urged is its educative value, and that this is not limited to the subject itself, but extends to the rest of the curriculum of the school. Frequent and most striking testimony to this effect was given in many of the towns visited by the Commission. Contact with concrete things enables children to grasp arithmetic, weights and measures, and many other subjects in a manner totally different from their lamentable failure to do so from the usual merely theoretical teaching. And the keenness of spirit which it begets, and which is carried forward into their other work (to which reference has previously been made), is of the highest possible value. To attain these results educational handwork should be taught by thoroughly skilled teachers who are permeated with its true spirit.

It must never be forgotten that mere manual dexterity, or simply the deft manipulation of tools, is not the main object sought: the educational aim must always be kept well in view. Time that is spent in merely perfecting the manipulation required to construct a model which has already been sufficiently well made, is wasted; as an expression of thought and feeling, its purpose has been served, and the increased difficulties of the next step should be faced. A certain amount of manual training vitalises the abstract bookwork, an undue amount beyond this point, to give increased technical skill, tends to draw away attention from abstract studies.

Another point of value to be noted in connection with the teaching of manual training is that the contact with constructive handwork raises the status of industrial work. Much too often those passing through the public elementary schools of the country look forward to occupying some clerical position, instead of applying themselves to mastering a handicraft, or fitting themselves for some industrial occupation. Manual work is looked upon as being on a lower plane, and hence the outrageous number of applications for a poorly paid clerk's place, when positions, with great possibilities in the higher stages, are open in connection with productive industry. For one thing, most boys have never had the opportunity of using their hands at school and realising the charm of "making things," and for another, the work of a craftsman is looked upon as inferior to that of a clerk. Both these points should be met, and the boys of an industrial nation should certainly come into contact with manipulative and constructive handwork during their school life.

In the United States there is a very remarkable feature in connection with manual training which is unique and obtains in no other country, and that is the manual training high schools. In these institutions, in connection with a high school education, a large amount of time is given to handwork of a most elaborate

nature. The buildings are extremely fine, and provided with the most complete and costly equipment. There is frequently a forge shop with some twenty forges, patternmaking is taught, and there is a foundry, in which sometimes lead or white metal is used, but in others there is a furnace for iron. There is usually a splendid equipment of woodworking benches, with a separate set of tools for each boy, and a large number of lathes for wood-turning, also a mechanical engineering workshop fitted up with a variety of lathes, drills, planing, milling, and other machines. There is also a good school of art. Sometimes as much as ten hours per week are given to manual training.

The principals are most emphatic in expressing their belief in the educational value of the work, stating that the boys learn such subjects as geometry and algebra much better from realising their value and importance, and that in general they easily "forge ahead" of other boys. The boys are all most keen at their work, and it is constantly urged that if you in the workshops secure keenness and persistence of method, these qualities do not stop in the shop, but are carried into all the other work of the school. The educative value of the manual work in itself is valued very highly, it means care, forethought, reason, judgment, patience, exactness.

These schools carry manual training much further than is generally considered necessary to get the full educational value from the training of the hand and eye. They have a distinct engineering trend, no fewer than 70 and 90 per cent. of the boys leaving from two of these schools go into manufacturing works of some kind. The boys graduating at one of these schools get credit for three years out of a four years' apprenticeship. That all this preparatory and specialised educational handwork is having a marked effect upon industrial progress cannot be doubted.

The writer directed his attention specially to this subject, and it does seem to him that its importance deserves and should receive earnest consideration, with a view to the modification of the methods now in use in the public elementary schools of this country. The principles underlying the teaching of kindergarten and of the subsequent early grades, really that the child should progress much as the race has done, the association of educational handwork with the curriculum of the school up to probably the age of 16—these principles, thought out and adapted to our own requirements, seem to offer a means of counteracting the present tendency of our elementary school system to produce boys with no initiative or self-reliance, and with no desire to continue their education any longer than it is forced upon them.

Much work largely upon these lines is already done in several private secondary schools in England with excellent results. It is surely now time that such advantages should be placed within the reach of the people at large in the public elementary schools. One very necessary preliminary step should be taken. The Board of Education insist upon the manual instruction room being constructed as a workshop, and not as a class-room; else the effect is to degrade the subject from the position it ought to occupy as an integral part of the curriculum of the school. It should be placed on an equality as to importance and educative value with the other subjects. Much of educational handwork may be done in ordinary class-rooms, and when in new buildings suitable provision can be

made for benches and lathes being placed in ordinary rooms, it is not desirable that permission so to house it should be refused and the workshop aspect insisted upon. Greater freedom might at once be given to the teachers throughout the schools to devise courses of work in consultation with the inspector, of greater educational value and much greater interest to the scholars than are most of the present ones, and thus pave the way for more thorough work hereafter.

Official sanction and encouragement could do much to begin to modify existing methods, but, to get the full value of what is good and sound in the direction indicated in this report, means that the educational course for the teachers now being trained should be specially adapted to fit them to give this teaching. An obvious criticism is that to attempt anything of this kind is to overburden an already overlaid curriculum. It would be manifestly impossible simply to superimpose the methods that have been sketched upon the present code regulations, but if they are of real value in dealing with the deficiencies of our present system, attention directed to their study would lead to the discovery of what is practicable, and possibly to the conclusion reached by one of the many brilliant teachers met with in the States, who was working out those ideas in terms of public schools, that the result would be to lighten, and not burden, the curriculum.

It is impossible to attach too much importance to the training of the teachers for our public elementary schools. The present provision of training colleges is woefully inadequate to meet the existing and prospective requirements. If the most is to be made of kindergarten, educational handwork, and of the modern methods which have been referred to, it can only be possible by the teachers being generally and excellently trained, and though it may be costly, the outlay should not be grudged. The most powerful factor in the education of a child, be the method or system whatever it may, is the personality of the teacher and the face to face contact with the child.

One or two other points which very forcibly struck the writer as lessons that we ought to learn from America can only be briefly named; they will no doubt be fully dealt with by other members of the Commission. One is the immediate necessity of providing secondary education in reasonably accessible centres at moderate fees, but with a large number of scholarships or exhibitions, or some method by which the clever boys and girls from the elementary schools may pass forward to the higher schools. These scholars may not be very numerous, but they must not be neglected; no country can afford to waste its intellectual wealth. Where capacity exists it should be caught, and opportunities afforded for its development. The secondary (high) schools of America are the training-ground not only of youths and girls who go from them direct into industrial or commercial occupations, but of the youths who go forward to the technical institutions and take their (probably four years) course of training there, as naturally as a youth going into one of the learned professions here goes to the university. This is not the case in England. There are more day students of technology (upwards of 1,100) at the Massachusetts Institute of Technology than there are in all the similar institutions of this country put together. Surely England is not giving herself an equal chance with other nations whilst this state of things continues.

The last point that can be named is the advantages that are derived in the United States from the opportunities afforded for specialisation. The system of elective studies may possibly be carried too far in some colleges and universities, but it does at any rate lend itself to the production of men well up in their chosen subject. At the Johns Hopkins University at Baltimore, there is a system of elective courses ; each of these embraces a special and at the same time carefully chosen group of subjects. The universities in this and other ways lay themselves out to meet the demand for preparation for industrial and commercial life. There is a need for such opportunities being afforded in England ; the newer universities are moving in this direction, but much more is possible, and ought to be done by the older universities, the colleges, and the public schools. There are modern requirements which ought to be met, and provision should be made to prepare for their future careers those who will be engaged in the industrial and commercial activities of the country. In increasing numbers these youths are seeking to secure the advantages of a public school and university training, but their particular requirements are not yet met in any serious way, nor are they even recognised.

It is high time that England roused herself to consider these facts. She has splendid raw material in her people, magnificent traditions behind her, an educational system containing some elements superior to anything in the world, but in dealing with modern requirements she can undoubtedly learn some lessons from the West ; and those who love her most long intensely to see her "wake" up to realise and deal adequately with a problem of vital importance to her as an industrial and commercial nation.

JOSEPH R. HEAPE.

Mosely Educational Commission.

Report of the Rev. A. W. JEPHSON, M.A., Member of the School Board for London.

This report should commence with a list of the various cities I visited and the institutions upon which I formed my conclusions. The former included: New York; Washington; Philadelphia; Baltimore; New Haven and Yale, Conn.; Boston and Harvard, Mass.; Chicago, Rock Island, and Moline, Ill.; Kansas City, Miss.; Lawrence, Topeka and Newton, Kan.; Colorado Springs and Denver, Col.; Guthrie and Oklahoma, Okla.; Houston and Galveston, Tex.; New Orleans, La.; Memphis, Chattanooga, Nashville, and Knoxville, Tenn.; and Luray, Va. I visited, and was most cordially welcomed with my colleagues, at the following universities: Columbia, New York; Yale, Conn.; Harvard, Mass.; Chicago, Ill.; Kansas State, Lawrence, Kan.; Tulane, New Orleans, La.; Vanderbilt, Nashville, Tenn.; and Tennessee, Knoxville, Tenn. I have inspected various training schools for teachers, some colleges for the higher education of women, a remarkably fine institution at Hampton, Va., for the industrial training of negroes, one of the U.S.A. schools for the training of Indians at Haskell (Kansas), and the Fisk University for Negroes. I have inspected various technological institutions, commercial schools, and evening schools, besides carefully investigating about 30 high schools and manual training high schools, as well as paying visits to ordinary schools and inspecting them from kindergarten to VIII. grade (about 100 different schools).

The first general impression made on me was astonishment that, notwithstanding the lack of a central authority and the almost complete autonomy of the various States and the big cities, notwithstanding the fact that sometimes we met with a law of compulsory attendance and more frequently did not, notwithstanding that the initial age for schooling varied considerably, and the age for leaving school still more so, there was nevertheless a common type of educational methods to which all the States and cities conformed more or less. Briefly speaking, it may be described as a system where a board of business men look after the finances and appoint a superintendent with large powers to carry out school management.

The absence (except in the Eastern States) of any leisured class of citizen probably accounts for the adoption of this system of public elementary schools and their related high schools being committed to the practically undisputed governance of a superintendent. Whether the people of England would ever approve of such a system is not clear. It has many and distinct advantages: (1) an educationalist has control of all schools; (2) changes can be made in curricula easily; (3) one man gets accurate knowledge of his teachers, and can promote the most deserving at once; (4) the whole of the schools are easily co-ordinated; (5) he arranges for the training and examination of teachers; (6) he inspects and examines the schools when necessary; (7) he arranges for the transfer of pupils to the high schools; (8) if the schools are not prosperous the superintendent can be changed. The obvious disadvantage is that

too much power is placed in the hands of one man, and secondly that thereby worthy people are deprived of an opportunity of helping on elementary education, of whom we have abundance in England. There is a danger, too, of the system becoming stereotyped, as one man is less open to the onward march of progress than a committee. However, in America this system is universal and works well, and moreover the people are all quite satisfied with the results.

The second general impression made on me was again astonishment at the universal desire for education, and the best kind of education, evinced by all classes of the community. President Roosevelt said to us in the White House: "Education may not have made America, but America without education would be lost. It is the only security in a democratic State." Everywhere the desire for good education exists and grows, with the result that nobody objects to the large sums of money expended in education. In one place we heard of an economising Town Council who, finding money scarce, abolished the kindergartens and the evening schools. Public indignation was so strong that after a few weeks the schools were reopened and the city fathers had to try another method of saving money. In many cities one-half of the total local expenditure was devoted to public education. In the State of Kansas (that huge wheatfield of the States) six-thirteenths of the whole expenditure was for public education.

From the first it was obvious that we were dealing with an entirely different kind of public opinion on education from that which prevails in England. This may be partly accounted for by the fact that the whole community uses the public schools; all classes meet in the common school, consequently all classes agree in supporting education. This enthusiasm for education in America must be pre-supposed in every remark I may subsequently make.

Organisation and method are natural to an American, and the third impression made on me was that their systematic methods were responsible for a good deal of the success which has attended their administration of education. Schemes, plans, programmes, schedules abounded. No fresh subject could be properly taught until a scheme was drawn up fully, touching all the points and parts and properly arranged. In the New York Board of Education the thousands of cards fully indexed containing information about each individual teacher of all kinds afforded a really marvellous instance of the length to which organising might be carried. There is a danger that this may be carried too far, and too much stress laid on the machine and not enough attention paid to the man who, after all, has to work the machine.

The fourth impression I carried away with me was the admirable way in which the completely *free* system of schooling was co-related and co-ordinated. In every State and city high schools are to be found to which the children, having passed through (graduated) the public schools, are sent as a matter of course. These high schools (there are now 6,000 of them in U.S.A.) take children from 14 years of age for a four years' course as a rule. There are ordinary high schools, classical high schools, commercial high schools, and manual training high schools. I append here the courses of instruction in three of the four kinds of school. I omit the commercial high school, as in my opinion too much importance is given to such subjects as shorthand, type-writing, and book-keeping, which are, after all, only partially educational. The example given is from Denver, Colorado, and is fairly representative of many other schools visited.

HIGH SCHOOL.—GENERAL COURSE.

Numerals indicate the number of exercises in a study each week.

	MATHEMATICS.	SCIENCE.	HISTORY AND ENGLISH.	FOREIGN LANGUAGES.	MISCELLANEOUS.
FIRST YEAR. Fourth Class.	Algebra. 5	Physical Geography. 2	Greek History. 3 Writing in English. 3	Latin or German *(a) or † (b). 5	Drawing. 2 Music. 1 Calisthenics, Girls. 2 Calisthenics, Boys 1 or Military Drill. 1
SECOND YEAR. Third Class.	Plane Geometry. 4	Physiology or Botany. 4	Roman and Mediaeval History until February; Literature and Composition, February till June. 5	Latin or German *(a) or † (b). 5	Drawing. 2 Music. 1 Calisthenics, Girls. 2 Calisthenics, Boys 1 or Military Drill. 1
THIRD YEAR. Second Class.	Solid Geometry till February. Book-keeping, February till June. 14	Physics. 15	Modern History until January. States History (General Growth and Constitutional Development. English Composition. English Literature (elec.) 15	Latin or German *(a) or † (b). French or Spanish. 5	Drawing. 2 Music. 1 Calisthenics, Girls. 2 Calisthenics, Boys 1 or Military Drill. 1
FOURTH YEAR. First Class.	Plane Trigonometry till January. Algebra and Reviews, January till June. 14	Chemistry. 15	English Literature. 4 English Composition. 1 English History (elective). 15	Latin or German *(a) or † (b). French or Spanish. 5	Drawing (optional). 2 Music. 1 Calisthenics, Girls. 2 Calisthenics, Boys 1 or Military Drill. 1

* Advanced work for those who have taken German in the grades.

† German begun in High School.

‡ Two unprepared or laboratory hours each week.

§ Those who contemplate an advanced scientific course may substitute French for History and English for Science in the third and fourth years. Others, by permission of the Home and the Principal, may substitute French or Spanish for Mathematics, the English Literature (elective) and the English History (elective) for Latin or for German in the last two years.

Most students preparing for college should review Algebra and Plane Geometry in the last year, as do students in the Classical Course.

HIGH SCHOOL.—CLASSICAL COURSE.

Numerals indicate the number of exercises in a study each week.

	MATHEMATICS.	SCIENCE.	HISTORY AND ENGLISH.	FOREIGN LANGUAGES.	MISCELLANEOUS.
FIRST YEAR. Fourth Class.	Algebra. 5	Physical Geography. 3	Greek History. 8 Writing in English. 3	Latin. 5	Drawing. 2 Music. 1 Calisthenics, Girls. 2 Calisthenics, Boys 1 or Military Drill. 1
SECOND YEAR. Third Class.	Plane Geometry. 4		Roman History. 4 Rhetoric and Composition. 2	Latin. 5 Greek 4 or German *(a) or † (b) 5	Music. 1 Calisthenics, Girls. 2 Calisthenics, Boys 1 or Military Drill. 1
THIRD YEAR. Second Class.		Physics. 15	English Composition. 1	Latin. 5 Greek 5 or German *(a) or † (b). 5 French (optional). ||5	Music. 1 Calisthenics, Girls. 2 Calisthenics, Boys 1 or Military Drill. 1
FOURTH YEAR. First Class.	Reviews of Algebra and Plane Geometry. 3		English Literature. 4 Composition. 1	Latin. 5 Greek 5 or German *(a) or † (b). 5 French (optional). ||5	Music. 1 Calisthenics, Girls. 2 Calisthenics, Boys 1 or Military Drill. 1

* Advanced work for those who have taken German in the grades. † German begun in High School. ‡ Two unprepared or laboratory hours each week.

|| Students preparing for any college offering several courses may join such classes as will prepare them for the particular course which they may elect.

MANUAL TRAINING.—HIGH SCHOOL.

COURSE OF STUDY.

NOTE.—The figures after the studies indicate the number of school hours per week devoted to each subject.

FIRST YEAR.

Mathematics (5).—Algebra until February; plane geometry.

Science (4).—Physical geography until February; botany.

History and English (3).—American literature and rhetoric until February; Greek history.

Language (4).—Latin or German, or English.

Drawing (4).—Freehand (2); mechanical (2).

Manual Work (10).—For Boys: Joinery, clay modelling, design wood-carving, wood-turning. For Girls: Plain sewing, wood-carving, design, and clay modelling on alternate days.

Music (1).—Chorus singing.

Physical Culture (1).

SECOND YEAR.

Mathematics (4).—Algebra until February; plane geometry.

Science (5).—Physics with laboratory practice.

History and English (3).—Roman history until February; rhetoric; English and American literature.

Language (4).—Latin or English, or German.

Drawing (4).—Freehand (2); mechanical (2).

Manual Work (10).—For Boys: Pattern-making and moulding, 20 weeks; forging, 18 weeks; lessons in brazing and soldering. For Girls: Drafting patterns; cutting and fitting undergarments; machine-sewing; wood-carving on alternate days.

Music (1).—Chorus singing.

Physical Culture (1).

THIRD YEAR.

Mathematics (4).—Algebra; plane trigonometry or solid geometry, or book-keeping.

Science (5).—Chemistry with laboratory practice (5).

History and English (5*).—English history; English literature; civil government.

Language (4).—Latin or English, or German; French. †

Drawing (4).—Freehand (2); mechanical (2).

Manual Work.—For Boys: Vice work, machine tool work; construction. Lectures upon mechanism, electricity and magnetism. For Girls: Cooking; domestic science, domestic art or carving. The manual work of this year occupies ten hours per week for twenty weeks, and eight hours per week for eighteen weeks.

Music (1).—Chorus singing.

Physical Culture (1).

The best children in the primary schools pass into the high school and continue their education till 18 years of age. They can then go to the normal schools or to the university for another four years' course. All this education is given without charge or fee to the student. This fact accounts for its popularity with many, and also for the large number of students of all classes and kinds. Some of the universities accredit good high schools which come up to their standards, and receive the pupils from them, without requiring an entrance examination.

This giving of a free education to all who desire it and can arrange for it is the one feature of U.S.A. education which I desire to see reproduced among ourselves. It is true in the States that many parents deny themselves the small immediate wages of their boys and girls in order that the bright children may be fitted for better

* Three for the first five months.

† French may be substituted for Mathematics in the third year.

and higher positions when they enter the world of business, trade and commerce. In time parents would do the same in England. The sharp, bright children having an opportunity before them to proceed in the work of education would incline to the high school rather than to earning immediate small wages, and moreover steps could be taken to keep the bright children at school by those interested in them. It is obvious that each board or national school must have in it each year some one, if not more, sharp child who ought to go on with his or her education. At present these sharp children are lost to the State. A properly organised system of high schools will provide an opportunity for some of the best future citizens of England to advance to their natural capacity.

In most of the high schools evidence was forthcoming that the largest merchants and business men snapped up the young people from the high schools for their workshops and offices. Everybody in America works and has to work. Trade and commerce represent the ideal of an American citizen; consequently every one has an incentive before him to work and work hard. There are advantages in not having a leisured class of citizens. Appended is the syllabus for the fourth year in the high schools of New York, together with the books in use:—

COURSE OF STUDY—FOURTH YEAR.

REQUIRED SUBJECTS.

ENGLISH—Three Periods.

First Half (Term VII.)

Literature—

REQUIRED—Macaulay: Life of Johnson.*

Burke: Speech on Conciliation with America.*

Composition—

- (1) Short themes of various types.
- (2) At least one argument of considerable length developed through formal introduction and brief. Such work should show a considerable advance in complexity over that required in Term IV.
- (3) Paragraphs illustrative of elements in argumentation, *e.g.*, an appeal to the interests of an audience, clear statement of a question, practice in the various methods of developing proof, summaries of proof, etc., all supplementary to the formal argument.

Technical English—

Incidental instruction in such phases as need special emphasis.

Second Half (Term VIII.)

Literature—

REQUIRED—Shakespeare: Julius Caesar.*

A survey of the history of the English language and literature, together with a review of the books for "study and practice."

Composition—

- (1) Abstracts, summaries, reports on special investigations, etc., all carried on in connection with the work in literature.
- (2) Optional. At the end of the course in English each student may be required to submit a final theme of considerable length to illustrate as fully as possible his power of expression.

Technical English—

Incidental instruction in such phases as need special emphasis.

* Books marked with an asterisk are those set down by the College Entrance Examination Board for study and practice.

A FOREIGN LANGUAGE—Four Periods.

CHEMISTRY OR PHYSIOGRAPHY OR BIOLOGY.*—Four Periods.

CHEMISTRY.

The course in chemistry for the fourth year conforms to the syllabus of the College Entrance Examination Board.

It is recommended that the candidate's preparation in chemistry should include:—

1. Individual laboratory work, comprising at least forty exercises selected from a list of sixty or more.
2. Instruction by lecture-table demonstrations, to be used mainly as a basis for questioning upon the general principles of chemistry and their applications.
3. The study of at least one standard text-book to the end that the pupil may gain a comprehensive and connected view of the most important facts and laws of elementary chemistry.

In general the work of the first half-year (Term VII.) should include a study of the laws of chemical combination as illustrated by the non-metallic elements and their simpler compounds. The second half-year (Term VIII.) should include a systematic study of the metallic elements, their compounds, and such compounds of carbon as are mentioned in the syllabus.

PHYSIOGRAPHY.

BIOLOGY.

The syllabus of the elective work in biology for this year of the curriculum shall correspond to the requirements outlined by the College Entrance Examination Board.

ENGLISH AND AMERICAN HISTORY AND CIVICS—Four Periods.

This course is required throughout the fourth year, four periods per week. Contemporary English history is particularly important in the work of the first half-year. The essential purpose in teaching American history should be to explain clearly the character, growth, and meaning of American institutions, to create reverence and love for them, to beget a due appreciation of the right of suffrage, and to cultivate power to consider intelligently the problems of the day.

The following general topics are suggested as being of great importance throughout the first half-year: colonial assemblies and their relations with royal governors; slavery with its industrial, economic, and social results; religious toleration; English and French rivalry for colonial possession; American industries and commerce; education.

First Half (Term VII.)

I. Discovery and Exploration.

II. Colonial Period.

1. Spanish, French, and English spheres of influence.
2. English expansion.
3. Social, industrial, and political development.

III. The Formation of the Union.

1. Breach between the colonies and England.
 - (a) Theories of colonial administration.
 - (b) Influence of American environment.
2. The final separation.
 - (a) Demand for absolute independence.
 - (b) The European attitude.
 - (c) Genesis of American diplomacy.
3. The critical period.
 - (a) Individualism against federation; the growth and development of national unity.
 - (b) Territorial policy of the Ordinances, 1787.
 - (c) The work of the Federal Convention.
4. Organisation of the constitutional government.
 - (a) Begun under Federal supremacy.
 - (b) Completed under Republican supremacy.

* A student preparing for college, who has already taken two foreign languages, may substitute a third foreign language for science specified.

The following general topics are suggested as being of great importance throughout the second half-year: industrial development; territorial expansion and the settlement of new territory; political parties and their platforms; economic and social conditions; tariff laws and finances; education.

Second Half (Term VIII.)

IV. Division and Reunion.

1. Political and industrial evolution and the resulting problems.
2. Industrial and economic controversies.
3. Development of the slavery question.
 - (a) The spirit of sectionalism as opposed to the spirit of nationalism.
 - (b) The controversy between the slaveholder and the free-soiler.
 - (c) The crystallisation of the spirit of union as opposed to the theory of State supremacy.
4. The Civil War.
5. Period of political readjustment.
 - (a) Reconstruction in the Southern States and its problems.
 - (b) History of the national debt.
 - (c) Administrative questions.
6. Second era of economic progress.
 - (a) Settlement and development of the West.
 - (b) Financial problems and the tariff.
 - (c) Industrial invasion of foreign markets.
 - (d) Acquisition of new territory.
 - (e) Problems of the day,—educational, political, social, and economic.

CIVICS.

Such parts of this subject as can be naturally and appropriately combined with the routine work in American history should be taken up whenever they will help to elucidate the matter in hand; for example, when copies of the original document can be used, as in Group III. of the appended outline, when constitutional questions arise, when new territory is acquired, when new States are admitted, or when the question of State rights is under discussion. But a generous amount of time should be used in a thorough study of civics with a text-book, in addition to the work suggested above, for which the following outline is offered.

- I. Elementary Study of the Nature and Origin of Civil Society.
- II. Origin and Development of Federal Institutions.
- III. Detailed Study of
 1. The Declaration of Independence.
 2. Articles of Confederation.
 3. Ordinance of 1787.
 4. The Constitution of the United States.
 5. The Constitution of New York State.
 6. Charter of Greater New York.
- IV. Constitutional Government as a Working System in this and Other Countries.
- V. Study of State and Local Governments.
 1. Relation of the State to the Federal government.
 2. Individual functions of the State.
 3. Powers of municipalities and towns.
 4. Importance of town government.
- VI. Political Parties, their Genesis and Operation.

ELECTIVES.

PHYSICS, AS IN THIRD YEAR—Five Periods.

GREEK—Four Periods.

First Half (Term VII.)

HOMER'S ILIAD, Book I. and part of Book II.

1. The greatest care is to be taken that the translations shall be careful and adequate. Every indication in a sentence, no matter how minute, which can aid us in faithful rendering, is to be noted. Matthew Arnold's Essay on Translating Homer is suggested as a guide.
2. Homeric forms are also to be considered in reference to Attic forms. Aim to fix more definitely the Attic Greek by comparison with the epic forms.
3. Scansion. Rhythmical reading with careful attention to the quantities of the syllables.

First Half (Term VII.)—*Con.*

4. Mythology. An accurate knowledge of the principal and most interesting facts in regard to the greater gods and their relations.
5. The legendary period of Greek history reviewed.
6. The use of some lexicon is advised.
7. The use of casts when possible and of photographs will add materially to the interest and comprehension of the pupil. The Greek worship and love of beauty can in this way be made intelligible.

Second Half (Term VIII.)

1. The Iliad, Book II. completed, omitting the catalogue of ships, and Book III.; selections from Books IV. to VIII., inclusive, or from the Odyssey.
2. Sight translation of appropriate passages.
3. Attic prose or Anabasis review, with prose composition. Review of grammar.
4. Supplementary readings from metrical translations of the Iliad or the Odyssey, such as Chapman's, Dryden's, Pope's, Cowper's, and Bryant's, are strongly recommended. In this way the sense of the literary value of Homer may be heightened.

As the recitation period is short, it is suggested that each teacher plan his work very carefully so that the greatest amount of progress may be made each day.

LATIN.—Four Periods.

First Half (Term VII.)

VERGIL'S AENEID, the first two thousand lines.

Second Half (Term VIII.)

VERGIL'S AENEID through the Sixth Book.

1. Further reading may be done in Vergil, Cicero, or other authors.
2. So much of prosody should be taught as is needed to make clear the structure and quantities of the dactylic hexameter. There should be much practice in metrical reading.
3. Mythology, the geography of the Aeneid, and the figures of rhetoric and prosody should receive attention. The humanistic and historic aspects also should be studied.
4. Thirty periods should be devoted to the translation into Latin of detached sentences and of connected discourse based on any of the authors read during the course.
5. The additional periods in this year should be devoted to composition, advanced reading, sight translation, or reviews, according to the needs of the class.

GERMAN.—Four Periods.

Advanced Course.

A. The scope of the instruction.

At the end of the fourth year the student should be able to read, after brief inspection, any modern German prose that is free from unusual difficulties. The aim should be to read easily, rapidly, and yet with intelligent, general appreciation, gradually dispensing with formal translation except of difficult passages.

First Half (Term VII.)

(a) Reading.

The reading of about two hundred pages of modern and classic literature with paraphrases and exercises as above.

(b) Prose composition.

The writing in German of a few short themes upon assigned subjects; independent translation of English into German.

(c) Letter writing, including business correspondence.

(d) Conversation.

At this stage the aim is to make German exclusively the medium of instruction.

(e) Supplementary reading.

Second Half (Term VIII.)

(a) Reading of about two hundred and fifty pages as in preceding term.

(b) Prose composition, conversation, and supplementary reading as in preceding term.

(c) Reference reading upon lives and works of the great writers studied.

(d) Letter writing as in the preceding term.

FRENCH.—Four Periods.

Advanced Course

A. The scope of the instruction.

At the end of the advanced course the pupil should be able to read at sight difficult French, and to write essays in French on subjects connected with the books read or on some simple topic; to translate easy English prose, and to carry on a simple conversation in French. He should also have some knowledge of the works and lives of the leading authors of the last three centuries.

B. The work to be done.

First Half (Term VII.)

(a) Grammar.

Special study of syntax and construction in the text-books read.

(b) Reading and practice.

Literature of the eighteenth and nineteenth centuries (about four hundred pages); composition and essays. Letter writing.

Second Half (Term VIII.)

(a) Reading and practice.

Literature of the seventeenth century (about five hundred pages); reference reading upon the lives and the works of the principal writers studied; composition and essays. Letter writing.

SPANISH—Four Periods.

Intermediate Course.

THIRD YEAR.

A. The scope of the instruction.

At the end of the intermediate course the pupil should be able to read at sight ordinary Spanish prose or simple poetry; to translate into Spanish a connected passage of English and to answer questions on the rules of syntax. Spanish should be the medium of instruction.

B. The work to be done.

First Half (Term VII.)

(a) Grammar.

Passive voice; the word *se*; *haber* used impersonally; peculiarities of the verb; irregular verbs; peculiar irregular verbs; irregular past participles.

Easy Spanish composition based on the day's lesson.

(b) Reading and practice.

Reading of about two hundred pages of easy Spanish prose; oral and written abstracts of assigned portions of reading matter.

(c) Conversation.

(d) Prose composition.

(e) Letter writing.

Second Half (Term VIII.)

(a) Grammar.

Conversation exercises involving a review of the work of the preceding term; special study of prepositions and the verbs *sobrar* and *faltar*; synonyms; idioms; proverbs; syntax and use of prepositions; construction of sentences illustrative of grammatical rules.

(b) Reading and practice.

Reading of about two hundred and fifty pages of easy modern prose; oral and written abstracts of portions of the text read.

(c) Prose composition.

Easy composition, independent of the text read; letter writing.

(d) Conversation.

MATHEMATICS—Four Periods.

First Half (Term VII.)

Logarithms, plane trigonometry, or review of mathematics.

Second Half (Term VIII.)

Solid geometry, higher algebra, spherical trigonometry, or review of mathematics including fifty periods of arithmetic.

STENOGRAPHY AND TYPEWRITING—Three Periods.

ECONOMICS—Three Periods.

The course in economics is an option in the fourth year, three periods per week. The scope of the work should include the following:—

First Half (Term VII.)

- I. Introduction.
 1. Human wants and how they are satisfied.
 2. Utilities of goods; wealth.
 3. Consumption as a motive for production.
- II. Production.
 1. Historical development of our industrial life.
 2. Handwork, guilds, machinery, factories, trusts.
 3. Factors in production.
 - (a) Nature.
 - (b) Capital.
 - (c) The entrepreneur.
 - (d) Labour.
- III. Exchange.
 1. Historical treatment of exchange—fairs, the rise of the jobber, international trade.
 2. Value and price.
 3. Money.
 - (a) Its functions, kinds, and value.
 - (b) Bimetallism and monometallism.
 - (c) Monetary history of the United States.
 4. Credit.
 - (a) Historical comparison of past and present credit.
 - (b) Banks and banking.

Second Half (Term VIII.)

- IV. Distribution.
 1. Rent.
 2. Interest.
 3. Wages and substitutes for the wage system.
 4. Profits.
- V. Governmental Interference.
 1. Early English regulations.
 2. Taxes.
 3. Tariffs and bounties.
 4. Labour laws.
 5. Government control and ownership of natural monopolies.
 6. Socialism and Communism.
- VI. Finance.
 2. Public expenditures.
 - (a) National, State, and local.
 3. Public revenues.
 - (a) Revenues other than taxes.
 - (b) Taxes.
 - (a¹) The principles and incidence of taxation.
 - (b¹) Direct and indirect taxes, and classes of each.
 - (c¹) National, State, and local taxes.
 - (d¹) Comparison of American and foreign systems.
 3. The Budget.
 - (a) Its preparation, and comparative study of it.
 4. Public indebtedness.
 - (a) National, State, municipal.

DOMESTIC SCIENCE (SEWING, COOKING, AND HOUSEHOLD ECONOMY)—Three Periods.

COMMERCIAL LAW AND COMMERCIAL GEOGRAPHY—Three Periods.

ADDITIONAL LATIN OR GREEK OR ENGLISH—Three Periods.

ENGLISH.

ELECTIVE COURSE IN ENGLISH.

First Half (Term VII.)

Literature—

SUGGESTED—A study of Elizabethan literature correlative with the study of Macbeth; Spenser and the dramatists; reading from lyrics and prose.

Composition—

Themes and other exercises of various sorts adapted to the literature read and to the needs of the class.

Second Half (Term VIII.)

Literature—

SUGGESTED—A study of the literature of the nineteenth century, including the essay, poetry, and fiction, and giving some prominence to the literature of this period in America.

Composition—

Themes and other exercises of various sorts adapted to the literature read and to the needs of the class.

NOTE.—Should the course suggested for the fourth-year elective English be found unsuitable, individual schools may, subject to the approval of the Board of Superintendents, adopt a course fitted to their respective needs.

MEDIÆVAL AND MODERN HISTORY—Three Periods.

This course is an option in the fourth year, three periods per week. A plan of the work should include the following general topics.

First Half (Term VII.)

Mediæval—

I. Forming of the Nations.

1. The fusion of the Latin and Teutonic elements under the Empire.
2. Growth of the Papacy and its struggle with the Empire.
3. Feudalism and its effects upon society, the church, and government.
4. The crusades as a turning point in mediæval times.

II. The Age of Revival.

1. Growth of commerce and the development of towns and city leagues.
2. The Renaissance and its intellectual transformation of Europe.
3. The Protestant Reformation.
4. Formation of the modern European nations. Influences of Greek and Roman, Christian and German civilisations.

Second Half (Term VIII.)

Modern—

I. Struggle of the Nations for Supremacy.

1. Age of religious wars.
2. Period of French domination in Europe.
3. Rise of Prussia and Russia.

II. Territorial Expansion.

1. Contest for colonial empire.
2. The French Revolution and Napoleonic wars.

III. Growth of European Nationality and Democracy since 1815.

IV. English Constitutional Development of the Nineteenth Century.

V. Scientific and Economic Advances since the Renaissance.

TEXT-BOOKS FOR FOURTH YEAR.

Supply Book Numbers.	ENGLISH.	Net Prices.
4276	Genung: Outlines of Rhetoric	\$0.80
4230	" Working Principles of Rhetoric	1.12
	†Gardiner, Kittredge, and Arnold: Elements of English Composition	.80
4232	Lockwood and Emerson: Composition and Rhetoric	.80
4195	Baker: Principles of Argumentation	.90
4411	Gayley: Classic Myths in English Literature	1.20
4196	Frink: New Century Speaker	.80
	†Hyde: School Speaker and Reader	.64
4389	*Burke: Speech on Conciliation with America (Lamont).....	.24
4408	*Shakespeare: Julius Cæsar (Hudson)	.28
4390	*Burns: Representative Poems, with Carlyle's Essay on Burns (Hanson)	.24
4391	*Carlyle: Essay on Burns (Hanson)	.20
	†Cervantes: Don Quixote (Wheaton).....	.40
4370	*Chesterfield: Letters (Ginn)	.24
4393	*Cooper: Last of the Mohicans (Dunbar)	.40
4371	*Dickens: Tale of Two Cities (McBae)	.40
4395	*Dryden: Palamon and Arcite (Eliot)	.20
4372	*Franklin: Autobiography (Montgomery)	.32

* In the list of books for supplementary reading recommended by the National Education Association.

† Adopted by the Board of Education, April 22nd, 1903. See minutes, page 717.

Adopted by the Board of Education, July 13th, 1903. See minutes, pages 1697, 1671, 1674, 1676.

Supply Book Numbers.		Net Prices.
4397	*Goldsmith: Vicar of Wakefield (Montgomery)	.24
4375	*Hughes: Tom Brown at Rugby (Robinson)	.40
4376	*Irving: Alhambra (White)	.36
4398	" Sketch Book—Complete (Litchfield)	.48
4377	" Washington and His Country (Fiske)	.48
	†Johnson: Rasselas (Ginn)	.28
4378	*Lamb: Tales from Shakespeare (Ginn)	.82
	†Landon: Selections from the Imaginary Conversations (Clymer) ..	.48
4402	*Macaulay: Lays of Ancient Rome (Daniell)	.28
4404	*Milton: Paradise Lost, Books I. and II., and Lycidas (Sprague) ..	.24
	†Plutarch: Lives (Ginn)	.36
4405	*Pope: Translation of the Iliad, Books I., VI., XXII., and XXIV. (Tappan)	.20
4382	Scott: Lay of the Last Minstrel (Allen)	.24
4384	" Quentin Durward (Yonge)	.40
4386	" Talisman (Holbrook)	.40
4727	Shakespeare: As You Like It (Hudson)	.36
4723	" Hamlet (Hudson)	.36
4725	" Henry IV., Parts I. and II. (Hudson)	.36
4732	" King Lear (Hudson)	.36
4720	" Midsummer Night's Dream (Hudson)	.36
4723	" Richard II. (Hudson)	.36
4724	" Twelfth Night (Hudson)	.36
4410	*Tennyson: The Princess (Cook)	.24

CHEMISTRY.

	†Dennis and Whittelsey: Qualitative Analysis	.80
5457	Williams: Elements of Chemistry	.88
5459	" Laboratory Manual of Inorganic Chemistry	.24
5458	" Chemical Experiments	.40

PHYSIOGRAPHY.

5598	Davis: Physical Geography	1.00
5539	" Elementary Physical Geography	1.00
	†Ward: Practical Exercises in Elementary Meteorology	.90

BIOLOGY.

5412	Bergen: Foundations of Botany, with Key	1.20
5413	" Foundations of Botany, without Key	.96
5414	" Teacher's Handbook to accompany Foundations of Botany ..	.24
5415	" Key and Flora of Northern and Central States	.82
5440	Blaisdell: Practical Physiology	.88
5441	" Life and Health	.72

ENGLISH AND AMERICAN HISTORY.

4869	Montgomery: Leading Facts of English History	.90
4871	" Student's American History	1.12
	†Robinson: History of Western Europe (Complete Edition)	1.28

GREEK.

3984	Homer: Iliad, Books I.-VI., School Edition, with vocabulary (Seymour)	1.28
3985	Homer: Odyssey, Books I.-IV., School Edition, with vocabulary (Perrin and Seymour)	1.00
3986	Homer: Odyssey, Books I.-IV. and IX.-XII., School Edition, with vocabulary (Perrin and Seymour)	1.20
3979	Homer: Odyssey, Book XII. (Minckwitz)	.28
3976	Goodwin: Greek Grammar	1.20
	§ " Greek Moods and Tenses	1.60
3976	Higley: Exercises in Greek Composition	.80
3977	Kendrick: Greek at Sight	.12
3987	White: Passages for Translation at Sight, Greek, Part IV.	.64
3978	Xenophon: Hellenica, Books I.-IV., Text Edition (Manatt)	.32
5537	Ginn and Company: Classical Atlas	1.00

* In the list of books for supplementary reading recommended by the National Education Association.

† Adopted by the Board of Education, July 13th, 1903. See minutes, pages 1697, 1671, 1674, 1676.

‡ Adopted by the Board of Education, July 13th, 1903. See minutes, pages 1694, 1684, 1683.

§ Adopted by the Board of Education, July 13th, 1903. See minutes, page 1709.

Supply Book Numbers.	LATIN.	Net Prices.
4045	Vergil: Aeneid, Books I.-VI., and Bucolics, with vocabulary (Greenough and Kittredge).....	1.28
4051	Vergil: Aeneid, Books I.-IV., and Bucolics, Text Edition (Greenough and Kittredge).....	.32
4035	Allen and Greenough: New Latin Grammar.....	.96
4030	" " " Shorter Latin Grammar	.76
4040	Collar: Practical Latin Composition.....	.80
4046	Moulton and Collar: Preparatory Latin Composition	.80
4050	Cicero: Fifty Letters (Dillard)	.32
4043	D'Ooge: Easy Latin for Sight Reading	.32
4036	Ovid: Metamorphoses, with vocabulary (Allen and Greenough) ..	1.20
4029	Sallust: Catiline, with vocabulary (Allen and Greenough).....	.72
4090	White: Latin-English Dictionary.....	1.20
5537	Ginn and Company: Classical Atlas.....	1.00

GERMAN.

5321	Goethe: Egmont (Winkler)	.48
5313	Kleist: Prinz Friedrich von Homburg (Nollen)	.40
5324	Lessing: Emilia Gallotti (Poll)	.40
5330	Schiller: Maria Stewart (Müller and Wenckebach)	.72
5331	Schiller and Goethe: Correspondence, Selections (Robertson)	.64

FRENCH.

5119	Hugo: Les Misérables (Sumichrast).....	.64
*	" Notre-Dame de Paris (Wightman)	.64
5121	Lemaître: Morceaux Choisis (Mellé)	.72
5122	Molière: L'Avare (Ginn).....	.32
5123	" Le Misanthrope (Bôcher)	.16
5124	" Les Précieuses Ridicules (Davis)	.40
5143	Sainte-Beuve: Selected Essays from (Effinger)	.28
	*Sévigé, Madame de, Letters of (Harrison).....	.40

SPANISH.

5351	Knapp: Spanish Grammar.....	1.20
5353	Moratin: El Si de las Ninas (Ford)	.40

MATHEMATICS.

4994	Wentworth: Plane Trigonometry with Tables	.72
4992	" New Plane and Spherical Trigonometry with Tables	.96
†	" Plane and Spherical Trigonometry with Tables, Second Revision.....	.96
4995	Wentworth and Hill: Logarithmic and Trigonometric Tables	.40
4989	Baker: Solid Geometry	.64
4988	Beman and Smith: New Plane and Solid Geometry	1.00
4991	Wentworth: Solid Geometry, Revised.....	.60
4993	" Plane and Solid Geometry, Revised	1.00
4949	" Higher Algebra	1.12
4973	Beman and Smith: Higher Arithmetic	.64
4974	Wentworth: Advanced Arithmetic	.80

MEDIÆVAL AND MODERN HISTORY.

4860	Emerton: Introduction to the Study of the Middle Ages	0.90
4864	Myers: Mediæval and Modern History	1.20
4866	" The Middle Ages	.83
†	Robinson: History of Western Europe (Complete Edition)	1.28
4872	" " " " Part I.	.80
§	Webster: General History of Commerce.....	1.12

* Adopted by the Board of Education, April 22nd, 1903. See minutes, page 717.

† Adopted by the Board of Education, July 13th, 1903. See minutes, page 1690.

‡ Adopted by the Board of Education, April 22, 1903. See minutes, page 716.

§ Adopted by the Board of Education, July 13, 1903. See minutes, page 1683.

Elementary Schools.

With regard to the elementary schools (I purposely use the English terms) one or two matters stand out prominently. There are no infant schools. In many places there are kindergartens where one or two classes of children are taken at six years of age. These kindergartens are by no means universal, and in many places are still maintained by private benefactions, as the local school authority is not yet convinced of their utility. Our system of infant schools, with the methods now almost universal, at least in London, seems to me to be a far better preliminary training for the graded school. In America the work of teaching children of seven the elements of all instruction is very hard indeed.

The grading of schools in America is similar to our own method, but the rule of "graduating," *i.e.*, passing through each of the eight grades and then solemnly receiving a formal certificate of the fact at an annual function, seems to me worthy of imitation, as it emphasises the importance of going right through the school and being able to show the certificate as proof of work done. Moreover a child cannot, as a rule, go to the high school unless he has "graduated" in the primary school. The importance attached to "graduation" is common throughout America, and even in the Sunday schools maintained by the various religious communities "graduation" is the rule not the exception, *i.e.*, a child must pass through every class in the Sunday school just as he or she passes through every class in the grammar or common school (elementary school) before the certificate is given. Another fact which impressed me greatly was the obvious intention of every teacher to get each child to do something of itself. Even in kindergarten the little ones were asked to choose a colour and then select beads or sticks of that colour. In grade one the children were given a series of figures and were expected to make up their own simple sums. Questions from the children were welcomed and were being constantly put even in the presence of strangers. As we went from room to room, in almost every school we visited we were struck by the large amount of initiative displayed by the children, and this was encouraged by every means in the teacher's power. The children were taught to think, and their studies were intended to train them to observe, to imagine, to reason, to feel, to will, and then to express. One principle underlies the work and determines the method—things, not signs for things are the true source of knowledge. Objects, facts, phenomena are observed, but then they are always compared, classified, and related. Analysis and induction are used as a means of training. The child from the first is accustomed to think for himself. As Sandy McKay says, "A mon kens only what he has learned hisself." I watched with interest boys putting a little original ornamentation into their woodwork, or the girls doing a little pretty stitching out of their own heads. The children were given a story to read by themselves, and next day one is asked to repeat it, and by means of others in the class to get the whole story straight. Or perhaps half a story is told, and the children are then invited to finish it for themselves. In drawing something is always left for the child's originality. In music (all music is taught by the old notation throughout America) children were asked to write themes on the musical lines and then the class sang them over in turn. As each child sits at a single desk, order is perhaps more easily obtained, but

the very friendly relations between teacher and pupil were really delightful to witness. And this, too, is common throughout America. It was the evident interest taken by each in the others. It was the elder sister and the little ones of the family. This was borne in upon me again and again. There are no school prizes in America.

Nature-study is made a great deal of, and in as far as it encourages observation and knowledge of actual things it is no doubt a good thing. Yet there is a danger lest the matters treated of should be divorced from their proper surroundings and place in the everyday life of the child. The plentiful supply of books both for teachers and children struck me as remarkable. The amount of home-work done is more than we could obtain in England. Parents in America like to see what the children are doing in school, and make proper arrangements for the child to study at home. Another fact which impressed us all was the teaching of patriotism. The flag of America is made very real to the children. In New York and elsewhere the children daily salute the flag and swear fidelity to it—perhaps necessary as there are so many foreigners in the schools—and everywhere the history of the United States is fully and completely taught. I was glad to find that the old text books which inculcated hatred to England are being given up, and others substituted which contain nothing to which any sensible Britisher can possibly object. "Civics," as it is called, forms a prominent feature of almost every school, elementary and otherwise. Books are used on this subject in every school, and far better books than any I have seen on the subject at home. The result is that every American child knows the extent of what I may now call the American Empire, Guam and all. He knows the States and principal towns, rivers and mountains, and, better still, he knows how he is governed and why. All the complicated arrangements for the election of President are well known. He knows the Ministers of State and what each is responsible for. He knows all his own State officials at least by name and can tell you what they do. This teaching of civics seemed to me admirable and might well be copied. Not that I wish to see the "flagolatry" of New York introduced into our schools, but I am strongly of opinion that the Union Jack ought to be displayed on all national occasions, and the children should know something of its history. The books used for teaching American patriotism would be a revelation to most of our authors, compilers, and teachers.

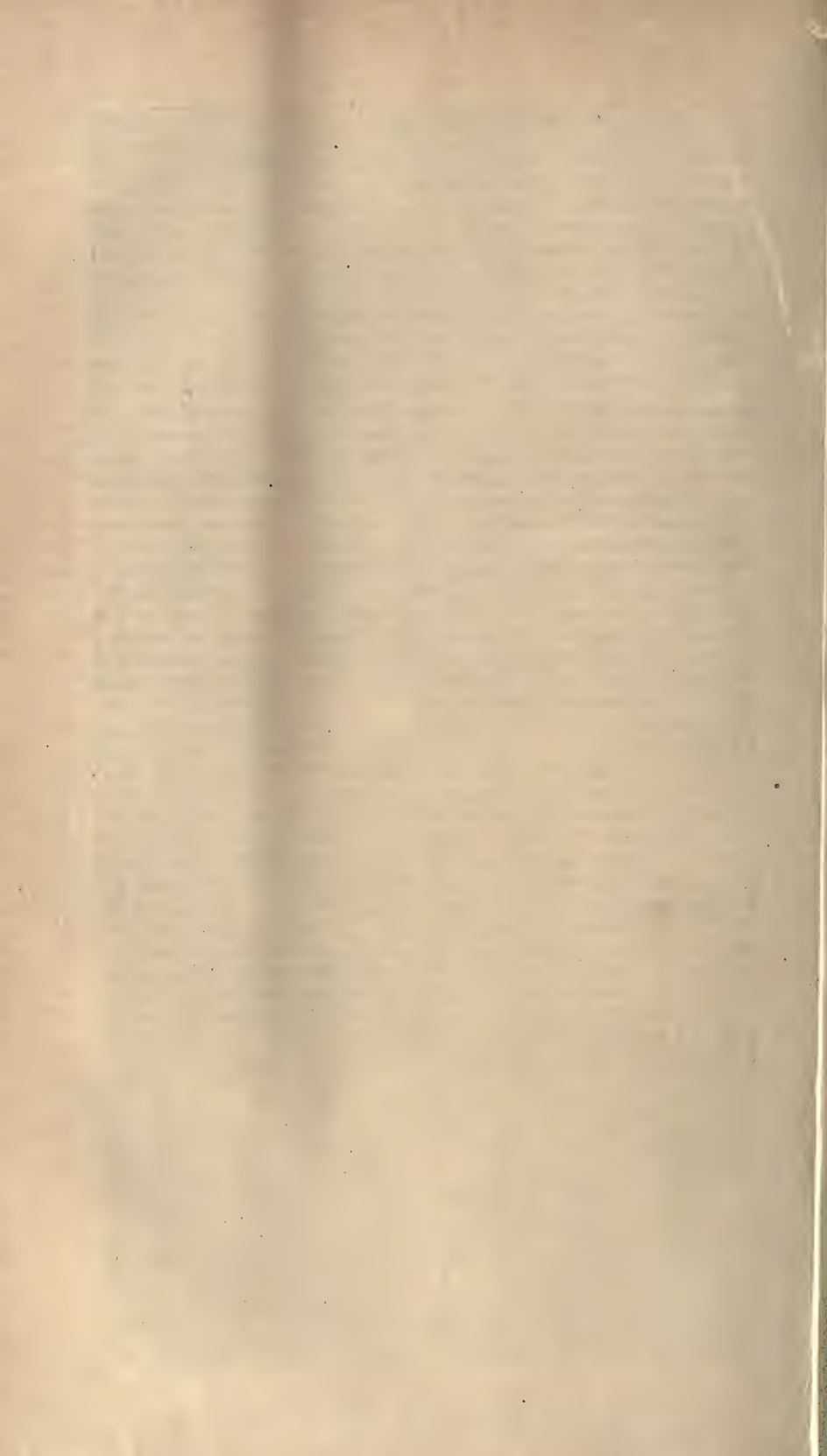
I noted that the classes were smaller than those I am accustomed to see in London. Blackboards, or rather ground glass, went round three sides of every class-room. The floors of the rooms were always polished, and there was no litter to be seen anywhere. There were a few pictures in the class-rooms, not nearly enough, but they were frequently changed. Single desks are universally used.

The arrangements for cloaks, etc., are universally faulty, for they are hung either in the corridor or in a room opening into the class-rooms. Halls are seldom found, and all physical exercises are taken in the class-rooms. In New York and Chicago there are few playgrounds attached to the schools. Many of the schools have all their class-rooms with wooden partition walls, which are made to slide back, until a huge open space is made, and this does duty for the assembly hall.

In the matter of buildings, I was convinced we at home had nothing to learn from America, either in convenience for teaching



A JUNIOR GIRLS' PUBLIC SCHOOL BASKET-MAKING CLASS.



or safety in case of fire. America spends lavishly on her buildings, and many of them are fine and imposing structures, with an elevation such as an architect loves, but which is expensive, to say the least. In one New York school the cost was \$350 (£70) per place. There were baths for the children in many schools, and in a Boston school an arrangement was made for every child to have a bath once a week (hot or cold according to the season). In many cities all over the States a doctor visits daily, sometimes accompanied by a nurse, to attend to small ailments and injuries. The doctor and the nurse were paid for by the Health Committee of the municipality.

In many of the kindergartens visited the school was only open in the morning, and there was always a motherly woman in attendance to wait on the little ones if they required it during school hours. The teacher of the kindergarten spent her time in the afternoon visiting parents—influencing them and interesting them in the work of the school. In very few places was there any systematic teaching of the children with defective minds. Boston and Philadelphia had made a beginning. The blind children are cared for by other authorities than the School Boards, and so are the deaf, as a rule.

One severe criticism must be made, and that is in the matter of attendance. As I have before stated, some States have adopted laws for compulsory attendance at school and others have not. The American fights shy of compulsion anywhere and everywhere. There is no systematic dealing with absentees. The attendance officers are far too few for the work, and in all the large cities there must be many children who are without education. The spirit of the people is, I know, in favour of sending the children to school, and it is a disgrace to an American citizen not to know how to read and write. Still the fact remains that there is no regular annual scheduling of the children as we have at home, and provision is not made for a place for each child and each child in its place. In New York, in Chicago, in Philadelphia, in Kansas, and New Orleans the schools (or most of them) are worked in double shifts, *i.e.*, one lot of children comes in the morning and another different set in the afternoon. The reason is that there are not enough places to seat the children all at once. But half-time education is a makeshift. No dependence can be placed upon the figures of attendance. Doubtless an accurate record is kept of those who are at school and choose to come to school, but what proportion this number bears to the total of the children living in a city or district is unknown. Unable and unwilling to apply compulsion as we know it, the school authorities assure themselves and us that the public sentiment in favour of education is sufficient to keep the children at school. Whatever that may accomplish in America, it will not be worth much in England.

Training of Teachers.

With regard to the training of teachers in America our experience varied with the different States visited. Naturally New York, with its boundless resources, was fairly well able to supply itself with the necessary staff for its schools, but the effect of the competition caused by the higher salaries offered by New York than other places, was felt even in Washington, 228 miles away. In Boston and New York and several other important centres the training of teachers

was adequate and admirable. But this was only in a few favoured spots. In Cambridge, just outside Boston, a short stay at a high school, together with some few observation lessons, was deemed sufficient there to constitute training for the teaching profession. We have much to be thankful for in the fact of our having trained and certificated teachers, who have to pass a standard fixed by a central authority.

In some of the places we visited the training was conspicuous by its absence. In fact, in a large number of schools, what are known in England as "Article 68 teachers" were the only ones possible. Owing to the small pay and meagre prospects of the teacher, the number of men employed is getting smaller and smaller. In Chicago the teachers had a meeting and the subject discussed was, "How to prevent the effeminisation of our school staffs!"

Many a bright young man starts life as a teacher and keeps up his brightness, until he is noticed by some merchant or trader and exchanges the school for the office and often for the manager's office. It was really remarkable to note how many of the more successful citizens (the wealthy and respected ones) had begun life as teachers. In Kansas this was over and over again illustrated by examples introduced to us. Incidentally it has a good effect, as it causes the profession of a teacher to be considered as one of the best and highest professions, and that by persons who know what that profession means. In Oklahoma (that new territory only opened 14 years ago, which will one day supply all the cotton England needs and nearly all the wheat, when it is properly cultivated) men teachers naturally turn to commerce as being far more lucrative than school-keeping, and the opportunities in a new country are numerous and valuable. Still it was an object-lesson in American ways to find in Oklahoma that, notwithstanding the rush and bustle of settling a new territory, the schools had not been forgotten. The high school in Oklahoma city was as good as any we saw, and some of the schools in Guthrie were admirable.

And all this has been done in the past 14 years. Some of the roads may be unpaved, some of the streets not in very first-rate order, but the schools are there, the teachers are there, and the whole machinery of primary school, high school, and university is there, all free to the children of this new community.

Several normal schools and teachers' training schools were inspected. The general idea seems to be that young people on leaving the high schools about 18 years of age, are induced to continue their studies for two, three, or four years longer at the normal school, and then to receive a diploma. This, if carried out universally, would be admirable, but inasmuch as each State and many of the cities are independent of all outside control, these ideas do not prevail, and teachers come into the schools with or without training as the case may be, or as the demand requires, or as the superintendent may think fit. It is not uncommon for the superintendent of even a small area to hold classes for training teachers, to examine the teachers who attend his classes, and then to grant them a diploma as being trained, and set them to work in his schools.

One of the most interesting of the teachers' training schools we visited was the Peabody school for training teachers in Nashville, Tenn. I append the scheme of recitations (lessons) published. (See pp. 230-233.)

The tone, spirit, and enthusiasm of the 214 men and the 354 women being educated there was delightful, and we carried away from it an intense desire to see institutions of this kind common in our own land.

One other feature of American training for teachers was the wide development of classes held by the various universities in the summer time, at which arrangements were made for giving short courses of instruction on subjects suitable to those engaged in teaching. At Tennessee University at Knoxville some 2,000 teachers attended for six weeks.

The subjects of the course included: (1) kindergarten, (2) rural schools, (3) city schools, (4) drawing and art, (5) vocal music, (6) manual training, (7) domestic science, (8) reading, (9) physical culture and children's games, (10) nature-study, (11) English language, (12) English and American literature, (13) literature of the Bible, (14) Latin, (15) Greek, (16) history and sociology, (17) book-keeping and banking, (18) neurology, (19) supervision, (a) rural, (b) city, (20) library instruction.

Evening and Vacation Schools.

The evening schools of New York seemed to be very well organised and extremely popular with the pupils. The rule of age is: No person shall be admitted to an evening school unless his age or occupation is such as to prevent his attending a day school. Some special application has to be made on behalf of persons less than eighteen years of age to ensure regularity of attendance and good conduct. There are ordinary evening schools, and in addition evening high schools, to these schools. No applicant shall be admitted unless he shall present a certificate stating that he has completed the studies of the elementary schools or passes an equivalent examination. The applicant must also present satisfactory evidence of good moral character. The studies in the evening high schools are similar to those in the day high schools to which reference has already been made. There are also vacation schools, which seem to be doing a wonderful work in the poorer part of the city. These and the recreative evening schools do much to tame and humanise a section of the population which is hard to reach or influence. It was observable that gymnastics and dancing formed part of the work of their schools. Moreover there was no fee charged in any of these evening schools.

One other feature of New York work deserves mention. During the winter months lectures with lantern views are given in halls, public rooms, and, weather permitting, in the open air, all without charge. These lectures are attended by thousands, and form one of the best educational efforts of the public-spirited Board of Education of New York. The lectures are given a prominent place in the newspapers and are well reported and notified. Work of this kind must tell in the long run, even on the inhabitants of the Bowery district, while its effect on other people is good, as it interests them in the work of the Board and enables them personally to profit by its action in providing these free lectures.

I hardly know where to leave off in describing the work of the various States and cities I have been enabled to visit. The work of the vacation schools is so varied and valuable that it requires a report all to itself.

13	III., IV.	Literature 3 8 Biology 5 B.L. Chemistry 7 C.L.	Chemistry 3 C.L.	Literature 3 8 Biology 5 P.L. Chemistry 7 C.L. Greek 5 12 Philosophy 1 3	Chemistry 3 C.L. Philosophy 1 3 Biology 1 10 II. Drawing 1 Stud. Physics 1 P.L.	Literature 3 8 Biology 5 P.L. Chemistry 7 C.L. Greek 5 12 Philosophy 1 3	Chemistry 3 C.L. Philosophy 1 3 Biology 1 10 II. Drawing 1 Stud. Physics 1 P.L.	Literature 3 8 Biology 5 P.L. Chemistry 7 C.L. Greek 5 12 Philosophy 1 3
	II.	(I. II. III.)	Philosophy 1 3 Biology 1 10 I. Drawing 1 Stud. Physics 1 P.L.	Chemistry 1 C.L.	Latin A. 5 Physical Ex. 1 Gym. Physics 1 P.L.	Chemistry 1 C.L. Latin A. 5 Physical Ex. 1 Gym. Physics 1 P.L.	Chemistry 1 C.L. Latin A. 5 Physical Ex. 1 Gym. Physics 1 P.L.	Chemistry 1 C.L. Latin A. 5 Physical Ex. 1 Gym. Physics 1 P.L.
	I.	(I. II. III.)	Literature 11 3 Greek 3 8 French 1 9 Physics 3 P.L.	Education 9 8 French 1 9 Chemistry C.L.	Education 11 3 Greek 3 8 French 1 9 Physics 3 P.L.	Education 11 3 Greek 3 8 French 1 9 Physics 3 P.L.	Education 11 3 Greek 3 8 French 1 9 Physics 3 P.L.	Education 11 3 Greek 3 8 French 1 9 Physics 3 P.L.
	III., IV.	(I. II.)	(Greek C. 8 German 1 9 Physics 3 P.L.) Am. History 7 3 Physical Ex. 1 Gym.	Greek A. 8 German 3 9 Education 7 3	(Greek C. 8 German 1 9 Physics 3 P.L.) Am. History 7 3 Physical Ex. 1 Gym.	Greek C. 8 German 1 9 Physics 3 P.L. (Geology 1 6 Physical Ex. 1 Gym.	Greek C. 8 German 1 9 Physics 3 P.L. (Geology 1 6 Physical Ex. 1 Gym.	Greek C. 8 German 1 9 Physics 3 P.L. (Geology 1 6 Physical Ex. 1 Gym.
4	III., IV.	(I. II.)	Greek A. 8 Economics 1 5 Music 3 Chap. Am. History 7 3 Physical Ex. 1 Gym.	French 3 9 Music 5 Chap. Physical Ex. 1 Gym.	French 3 9 Economics 1 5 Music 3 Chap. Am. History 7 3 Physical Ex. 1 Gym.	French 3 9 Economics 1 5 Music 3 Chap. Am. History 7 3 Physical Ex. 1 Gym.	French 3 9 Economics 1 5 Music 3 Chap. Am. History 7 3 Physical Ex. 1 Gym.	French 3 9 Economics 1 5 Music 3 Chap. Am. History 7 3 Physical Ex. 1 Gym.
	I.	(I. II.)	Young Women's Literary Societies.	Young Women's Literary Societies.	Young Women's Literary Societies.	Young Women's Literary Societies.	Young Women's Literary Societies.	Young Women's Literary Societies.
	II.	(I. II.)	Young Women's Literary Societies.	Young Women's Literary Societies.	Young Women's Literary Societies.	Young Women's Literary Societies.	Young Women's Literary Societies.	Young Women's Literary Societies.

Chemistry Course 1, Section IV., Saturday morning from 9 o'clock to 11 o'clock.

Chemistry Course 3, Saturday morning from 9 o'clock to 12 o'clock.

English Course 7, Saturday morning.

SCHEME OF RECITATIONS—SECOND SEMESTER, 1903-1904.

HOOR.	YEAR. III., IV.	SECTION.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.
9	I.	{ I. II.	Mathematics.. 4 5 Physical Ex... 2 Gym. English 2 9	Mathematics.. 4 5 French 2 12	Latin 2 6 Education 6 3 Astronomy 2 Gym. English 2 9	Mathematics.. 4 5 French 2 12	Latin D..... 6 French 2 12 Physical Ex... 2 Gym. English 2 9
9-15	III., IV. II. I.	{ I. II. III. { I. II. III.	Greek 2 12 Literature..... 8 8 Latin D..... 6 Philosophy .. 2 3 English 2 9 Mathematics .. 2 5	Latin..... 2 6 Mathematics.. 4a 5 Am. History .. 8 8 Literature 2 8 Biology 2 10 History 4 4 Music 2 Chap. Mathematics .. 2 5	Greek 2 12 History 13 4 Latin 6 Latin D..... 2 8 Philosophy ... 2 10 English 2 9 Music 2 Chap. Mathematics .. 2 5	Latin 2 12 Mathematics.. 4a 5 Am. History .. 8 8 Literature 2 8 Biology 2 10 History 4 4 Music 2 Chap.	Greek 2 12 History 13 4 Latin 4 6 Literature 2 8 Philosophy ... 2 3 English 2 9 Music 2 Chap. Mathematics .. 2 5
10-10	III., IV. II. I.	{ I. II. III. { I. II. III.	Mathematics.. 6 5 Am. History... 6 12 Literature..... 2 8 Philosophy ... 2 3 Latin D..... 2 6 IV. Drawing .. 2 Stud. Mathematics .. 2 5 History 4 4	Astronomy 5 Education 6 8 Latin 4 6 Biology 2 10 Music 2 Chap. Latin B..... 2 9 English 2 9	Mathematics.. 6 5 Am. History... 6 12 Literature 2 8 Philosophy ... 2 3 Latin D..... 2 P.L. Physics 2 5 Mathematics .. 4 9 History 4 9	Astronomy 5 Education 6 8 Latin 4 6 Biology 2 10 Music 4 Chap. Latin B..... 2 9 English 2 9	Mathematics.. 6 5 Literature 2 8 Philosophy ... 2 3 Latin D..... 2 6 Physics 2 P.L. Mathematics .. 2 5 History 4 9
11	III., IV. II. I.	{ I. II. III. { I. II. III.	English 4 9 Biology 4 B.L. Chemistry 2 C.L. Literature 2 8 Mathematics .. 2 5 History 4 4 Latin B..... 10	Chemistry 4 C.L. Latin D..... 6 Am. History .. 8 4 Mathematics.. 2 5 Education 2 3 Latin B..... 2 10 Physics 2 P.L.	English 4 9 Biology 4 B.L. Latin D..... 6 Am. History .. 8 4 Literature 2 8 Education 2 3 Latin B..... 2 4 Physics 2 P.L.	Chemistry 4 C.L. Latin D..... 6 Am. History .. 8 4 Mathematics.. 2 5 Education 2 3 Latin B..... 2 10 Physics 2 P.L.	English 4 9 Biology 4 B.L. Latin D..... 6 Literature 2 8 Education 2 3 Latin B..... 2 4 Physics 2 P.L.

12	III., IV. II. I.	Literature 4 8 Biology 6 B.L. Chemistry 2 C.L. Am. History ... 8 4 Latin B. 5 Physical Ex. 2 Gym. Education 2 3	Chemistry 4 C.L. Philosophy ... 2 3 Biology 2 10 I. Drawing 2 Stud. Physics 2 P.L.	Biology 6 B.L. Chemistry 7 C.L. Greek 6 12 Chemistry 2 C.L. Am. History ... 8 4 Latin B. 5 Physical Ex. 2 Gym. Education 2 3	Chemistry 4 C.L. Philosophy ... 2 3 Biology 2 10 II. Drawing ... 2 Stud. Physics 2 P.L.	Literature 4 8 Biology 6 B.L. Chemistry 7 C.L. Greek 6 12 Philosophy ... 2 3 Chemistry 2 C.L. Latin B. 5 Physical Ex. 2 Gym. III. Drawing... 2 Stud.
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4	III., IV. II.	Greek B. 8 Economics 2 5 Music 4 Chap. Physical Ex. 2 Gym.	French 4 9 Music 5 Chap.	French 4 9 Economics 2 5 Music 3 Chap. Physical Ex. 2 Gym.	Young Women's Literary Societies.	French 2 9 Economics 2 5 Music 5 Chap. Physical Ex. 2 Gym.

Chemistry Course 2, Section IV., Saturday morning from 9 o'clock to 11 o'clock.

Chemistry Course 4, Saturday morning from 9 o'clock to 12 o'clock.

English Course 8, Saturday morning.

The hours designated for Physical Exercise are for young women. The hours for young men are Tuesday and Thursday, from 8 o'clock to 6 o'clock p.m., and Saturday morning.

Hours not fixed for a study in the Schedule will be arranged by the Instructor.

In conclusion, I can only add that the spirit of enthusiasm for education common to all classes in America is the really formative cause of the immense strides which have been made in so many different directions in educational matters. This, alas! cannot be transported across the Atlantic, and without it I fear all our attempts to improve education will meet with open or veiled hostility. It is only a minority in our own beloved land who really wish to see English folk a highly-educated race. In America it is recognised that the educated man takes in a wide horizon, and puts more, 'soul' into his work. The pushing people out West, even amid all their immediate wants and the stress and strain of getting a living in new and unsettled lands, have never forgotten to provide schools. In fact some of the best schools we have visited were in the West. There is prudence as well as wisdom in this, as new settlers naturally turn to districts where they can readily obtain educational facilities for their children, and one of the reasons for the really remarkable growth of Oklahoma territory is doubtless the fact that the schools there compare favourably with any elsewhere.

When to the good schools is added the possibilities of a new country for making wealth, there is little to wonder at if the desert does blossom as the rose, and the people of Oklahoma expect to be able to double the export of cotton and wheat in a few years time.

It must be again placed on record that the reception we met with everywhere, the cordiality of our welcome, the readiness with which every facility for seeing places and people was afforded to us, must ever remain a pleasant and abiding recollection of a most happy time spent in America.

ARTHUR W. JEPHSON.

Mosely Educational Commission.

Report of Professor MAGNUS MACLEAN, M.A., D.Sc., F.R.S.E.

For some years past the industrial world has become increasingly conscious of the fact that American engineers exhibit a certain superiority in their methods over their rivals of other nations, and it is no secret that the Transatlantic manufacturer is capturing the markets of the world. The questions have, therefore, been asked, Is this efficiency due to higher characteristics resulting from the blending of races in the modern American, is it due to the natural resources of a great continent, or is it the result of a better system of education? A careful review of all the circumstances makes it evident that it cannot have been due primarily to the national education, for these among other reasons:—

First, the present highly developed educational system has only come into existence within very recent times. The secondary and technical schools, in particular, may be said to date from the period that followed the close of the Civil War, and most of them in their modern form are creations of the last 20 years. The earliest organised and endowed school of science in the States was the Rensselaer Polytechnic Institute, which now devotes itself mainly to civil engineering. It was founded at Troy as far back as the year 1824, and re-organised in 1849 as a general polytechnic institute. Sixteen years later arose the Massachusetts Institute of Technology, opened in 1865 as a school of industrial science. Within the next decade a few others sprang into existence, including Stevens Institute in 1871 as a school of mechanical engineering. Since then, numerous technical schools and university departments of applied sciences have been established all over the country, the majority of the latter during the last ten years. By themselves or in conjunction with other educational institutions these cannot be considered the cause of the national prosperity: for the men who have made the greatest impression upon American progress, and those who hold the most commanding positions in the Republic now, received their training before the new order of things arrived. Indeed, so far as the makers of the present industrial success had any higher education at all, they obtained it in schools which were very crude in comparison with the modern ones, or in these while they were still very undeveloped. Massachusetts Institute itself, which stands at the head of the whole system of technical education in the United States, is as different from the institution that bore that name in 1870 as anyone can imagine, and the same may be said of the great universities such as Harvard and Yale. Many of the outstanding leaders of industry had not even the advantages to be derived from an education in these earlier institutions.

To this day in Pittsburg, that world-renowned centre of activity, there is absolutely no school of any kind that would enable a young man or young woman to acquire the rudiments of a trade—none in which science or technology is taught with direct reference to the

national industries. It is pleasing to know that this want will shortly be supplied by the Carnegie Institute, for which plans have been prepared and which is already endowed to the extent of £400,000. But the fact remains that the greatest feats of engineering and of industrial enterprise have been performed by men who never attended a modern high school or school of technology.

Further, it has to be observed that when we come to inquire into the nationality of the inventors and of others who have marked out a new line, they are often to be found men of foreign blood. I was told by President Humphreys, of Stevens Institute, that mills and engineering undertakings in particular are dependent largely upon the direction of individuals of Scottish birth or extraction, and the United States labour statistics show that in New York over 70 per cent. of the men engaged in skilled labour are also of foreign birth; in Chicago, over 60 per cent.; while in Brooklyn the percentage is upward of 75.

The prospects of America, its immense natural resources and freedom from the trammels of tradition, have attracted the liberty-loving, who are generally the more ambitious and progressive of the inhabitants of other nations. These immigrants have been encouraged to spread themselves over the States whose varied climatic, agricultural, and industrial conditions suit their diverse requirements.

It would be folly to deny that race, and such factors as climate and the freedom, isolation, and natural resources of a great continent, have much to do with the making of so alert and aggressive a type as the modern American. I was impressed with this through seeing an immigrant train come into Chicago. Its human freight consisted of men, women, and children of all ages, and generally of fine physique. Such a circumstance in great measure explains the secret of America's success, for the home market is kept up there in supply and demand by no less than 800,000 to 1,000,000 immigrants yearly, and these of the best blood of Europe.

In the earlier stages of her history, America got on very well with a general education, not better, sometimes not even as good as that furnished in our own land; but after the Civil War when the Republic entered upon its career of uninterrupted progress and expansion, the natural resources of the country and its ever increasing population called into play vast social, political, and industrial forces which needed all the intelligence, and all the skill and training that the nation could command, to direct and control. Hence, arose the demand for a more perfect system of education, for higher and more technical knowledge to cope with the intricate problems and complicate machinery of the new time.

And it is here, in my opinion, that education has stepped in; not to create the already existing conditions, but to manage and control them, and to carry them to yet higher levels of efficiency. Without the superior intelligence and without the superior training which the new time has provided, the huge mechanism of State and industry must needs collapse, and America could neither cope with her own ever-increasing exigencies nor compete as she is doing with other nations. It is because the educational system she is evolving has so far borne the strain and is proving more or less adequate to the enormous demands made upon it, that it is at present evoking so much interest and attention.

In many ways the United States has exceptional opportunities for leading the way in new methods of education, and it cannot be denied that the nation is availing itself of its unique advantages. One thing, however, must be borne in mind, and that is that, like our own country, she is still in a stage of transition so far as her educational aims and machinery are concerned. She does not claim to have reached finality in her efforts to educate, or to have perfected any one system. She is just feeling her way towards a new and better method of instruction. But more than we or any European nation have yet done, she has entered upon many novel and interesting experiments which are gradually revolutionising her teaching. More than we, she takes account of the changed conditions in which men live to-day, and seeks to adapt her training to the current need. And more than we, she is thus attempting to solve the new educational problems that are confronting civilised nations.

Hence our mission to America to observe the trend of Trans-atlantic ideals. As a Commission, we wished specially to ascertain how far the educational methods in vogue in the States contribute towards the acknowledged capacity for business, organisation, and mechanics, which the American displays, and to what extent the training in the school and the college helps forward the commercial and industrial efficiency. To this end we studied education in all its phases, and sought to gauge the present state of public opinion as to the value of the highly specialised instruction now given in the schools and the colleges.

The particular part of this investigation assigned to me was inquiry into the conditions of engineering and technical education, and its relations with the various industries for which the students are being trained. Of course, in the time at our disposal, I was able to visit only a limited number of institutions, but those selected were eminently representative ones, and every facility was afforded me in common with others of the Commission to see all we desired to observe in connection with the equipment and work of these establishments. Indeed, I cannot too highly praise the genuine kindness, courtesy, and hospitality with which we were received, and the great willingness displayed by heads of institutes, colleges, and universities, as well as by leaders of industry and their officials, to supply us with every kind of information we wished.

The observations I have to make on the subject of inquiry, I propose to group under two heads, in the following order:—

I.—The attitude of employers towards the technically trained students of the higher institutions.

II.—Features of the technical education given in the best American colleges.

I.—The Attitude of Employers.

In Britain, owing partly to class and caste distinctions which do not hold to the same extent across the Atlantic, the impression has got abroad that education only spoils the common workman and unfits him for his industrial position. Manufacturers and managers generally seem to look with disfavour upon highly-educated youths and college men. At least, they give no preference or encouragement to this class over their more ignorant rivals, and, consequently,

the youths themselves, finding no advantage in remaining long at school or college, leave early, ignoring the benefits of a knowledge and training which seem to carry them no further forward in the actual business and trade of life.

The attitude in the States I found to be exactly the opposite of this. So far from disparaging education, the American regards it as the chief national asset, and strains every nerve to render it as widely diffused as possible, convinced that the increase of intelligence thus fostered will be a common gain. The educated youth will not only make a better citizen, but he will outstrip his more ignorant fellow in industrial efficiency, and in the long run leave him far behind. The conditions of American life have not permitted her people to ignore so obvious a fact. There are circumstances and forces, as I have indicated, which have thrust upon them more peremptorily than upon us, recognition of the value and necessity of education. Besides the economic fact that the development of the material resources of the country demands the best available intelligence and skill, there are the social and political factors. The nation is a democracy very pronounced in its view of personal rights and personal liberty, and if it is to govern itself wisely, it must make sure, as far as possible, that its members, drawn as they are from all nationalities, are sufficiently welded together and enlightened to make intelligent and safe use of their voting privileges. Widespread popular ignorance would be a constant menace and danger to the stability of the State, as well as to the industrial interests.

In consequence of this more enlightened view of education, manufacturers and employers of labour are more ready to recognise the superiority of the trained student over the untrained artisan, and are everywhere eager to get technically-trained men to direct their work; they show their interest in, and appreciation of, learning by founding and equipping institutes and colleges for the technical training of young men in the various industries; and they further encourage all such institutions by giving the college-trained youths a preference over those who are merely shop-trained.

"In all departments where high-class work is done," said one employer, "we pay good wages, and are always anxious to get technical men. They are broader-minded, and have a wider mental grasp than the man who left school at the age of 16 to learn his trade in a shop. In technical or any other kind of work, the young man who has been trained in a technical school very soon overtakes and outstrips the man who has had practical experience only. Their remuneration at first is no greater than that of the others who do similar work, but in almost all cases it increases more rapidly, and there is practically no limit to their promotion, while the man without technical education, unless in exceptional cases, finds his field of operations greatly restricted."

I was told on several occasions that ten years ago manufacturers would not take college-men, now they prefer them, because they can tackle new problems. Manufacturing processes are constantly developing, and there is room for men with new ideas. The cost of construction and commercial value of a machine must be taken into consideration when it is being designed, and the man whose technical training has been supplemented by practical experience in the shop is better fitted to handle these questions than one who has had only a shop-training.

The Pennsylvania Railroad Company insist on their men being engineers, and a large proportion of them are college men; while 85 per cent. of those employed by the engineer of the Rapid Transit Commission, New York, are also so trained. In an interview I had with the latter, he emphasised the fact that a youth trained in the office of a civil engineer learned the methods of one man only, whereas if he were college-trained before entering he was in a position to do any kind of work, and could solve a problem much more rapidly and with more initiative.

At the works of Messrs. Crocker and Wheeler, Ampere, where motors, dynamos, etc., are manufactured, they informed me that they give such a man thirty-two shillings a week to start with, but in a very short time he receives more than the man who started with them four years earlier, at the time he first entered upon his technical college work. They prefer his class, and readily take in students in vacation time. In the works of the General Electric Company, Schenectady, I learned that the non-college men who come in from the schools at 16 or 17 years of age receive only twenty shillings to start with.

The workmen who have acquired a trade or technical education might properly be divided into four classes:—

First.—Those who have attended a trade or technical school before entering upon practical work in the industry.

Second.—Those who pursued their school training in the evening at the same time that they were serving their apprenticeship in the trade.

Third.—Full-fledged mechanics, who, having learned the practical part of their trade, attended the evening schools to obtain a technical and scientific knowledge which would enable them to make better progress, and advance to positions of responsibility; and

Fourth.—Those who secured the technical portion of their training by a correspondence course of instruction.

The opinions of the manufacturers regarding the qualifications of these men and the methods of instruction have been summarised as follows:—

The young men who enter a workshop fresh from a technical school are not practical. As a rule they have had just enough shopwork to make them think that they are practical, when, in fact, they are not. Some of them have exalted ideas of their ability, and, if left to themselves, will waste material, and therefore are expensive to their employers. But after they have been in the shop a few months, and are drilled in shop methods, they make the best class of mechanics, and can be trusted with the most difficult and important kinds of work. Workmen who have had a good technical education make the most efficient men to fill positions as foremen or superintendents.

The best results are achieved in the least possible time by the men who have worked three or four years in the trade before going to evening technical schools, and by the apprentices who attend school while serving their apprenticeship. Of these two plans the latter is considered preferable. It permits the practical and theoretical training to be carried on simultaneously, and is more interesting to the student workman. Besides, it enables him better to appreciate what he is learning, and he develops much faster, and is more valuable both to himself and his employer.

In view of the fact that in recent years manufacturing has tended so largely towards specialisation that young men apprenticed to mechanical trades have been able in most cases only to learn single processes, and as a result the general mechanic has threatened to become practically extinct, to the detriment of manufacturing interests generally, great establishments like the Baldwin Locomotive Works, Philadelphia, the Motive Power Department of the Pennsylvania Railroad Company, and other firms, have instituted a system of apprenticeship on a basis adapted to existing social and business conditions. Having heard a good deal of these, I visited Baldwin's, and found that their system arranges for three grades of apprentices:—

1. Those from the grammar schools who enter under 17½ years of age and serve for four years beginning at 2½d. an hour, and rising by 1d. per hour each year, with a bonus of £25 at the end. This class have to take one year's course at a night school in elementary geometry and algebra, and the two following years in drawing. At the end of the four years they may be discharged from the employ with a diploma, namely, their indenture; and the bonus which is both their reward and the wherewithal to go elsewhere to seek employment.

2. Those who have had an advanced grammar or high school training, who are not older than 18 when they enter, and who serve three years, beginning at 3½d. per hour, rising by 1d. per hour each year, with a bonus of £20 at the end. In the case of these, owing to their superior education, the preliminary course in mathematics is dispensed with, but they must attend the night school for two years in mechanical drawing in order to learn to express on paper the ideas they absorb in the workshop.

3. Those who are graduates of colleges, technical schools, or scientific institutes, who enter at 21 or 22 years of age, and who serve for two years, beginning at 6½d. an hour and ending at 8d. These are not indentured, being men, but a specific contract is made with them, and though they do not receive a bonus they get a certificate at the end. It is from this class the firm fills, in due course, the superior positions in its workshops. Instead of being discharged, they are promoted at the end of their term, as are also any specially good ones from among the rest that the management comes across from time to time. There is no way into the works except through one or other of these three classes.

The company has a superintendent of apprentices to look after them in the shop and out of it, to see that they are taken care of, that the foreman does not take advantage of them, but that as fast as they learn they are pushed along, and to make sure that they attend the night-school. The firm engages to alter their particular employment every three months, so that they can get practice in all the shops during their apprenticeship. The college graduates are allowed to work for a similar period in any department they may select, and they can get what shifts they want by applying to the superintendent. I was informed that these find the first year very hard, but that afterwards they become leading men more readily than either of the other two classes. The most satisfactory apprentices are, perhaps, the second class, who come in from the high school at 18, and finish at 21. By the course of training provided for in this system, it is believed that a great benefit will accrue to the mechanic as well as to the employer.

It is worthy of note, with regard to apprentices in the States generally, that no premiums are charged, and that from the very first they earn what may fairly be called a living wage. What is even more remarkable, the American employer always keeps an open door for the technically trained man without setting an age limit, as in the case of non-college men. While it is very questionable whether the latter would be taken on as apprentices after 21 years, there is no doubt at all regarding the college graduate, even though he lengthens the period during which he is learning the scientific principles of his profession. The moral influence of this attitude of the employers towards the schools and their graduates is very great. It exercises a telling influence upon education all through, for it gives parents and children an interest in school work from the primary grade upwards.

II.—Features of American Technical Education.

Coming now to the features of the technical education supplied, it has to be noted that the students in the States are not in such a great hurry to get started as in this country. The educational system of the country and the entrance requirements of the institutes and colleges keep them in the public or private schools till they are 18 or 19 years of age, so that they enter two or three years older than is usual with our students, and they are thus, on the whole, better prepared for the work.

Of course, it is possible to acquire a certain amount of technical knowledge before reaching the level of the colleges. There are two classes of institutions, in particular, that aim at providing courses of instruction by way of preparation for industrial pursuits: these are the manual training schools established in connection with the ordinary school system, and the trade schools.

As a substitute for the old system of apprenticeship which is now practically becoming a thing of the past, except in the new form in which it has reappeared in Baldwin's and elsewhere, these trade schools are as yet on their trial. The one in New York, which I visited, provides instruction, in which both the practical and theoretical branches of quite a large number of trades are taught. There is, doubtless, a distinct place in the American system of education, both for the manual training and the trade schools if they are conducted on right lines, and can guard against the error of substituting devices for principles. As a high authority remarked, the student ought to "learn how to learn" if his training is to be of any real value to him.

All the institutes and colleges and universities have not the same conditions of entrance. In the case of some it is sufficient that the student has graduated in the high school. Others admit by examination. For some time past, following the lead of Michigan, certain universities and colleges have had a method of "accrediting" schools. The system consists in sending a university examiner to visit the secondary schools, and if the work done in them be found satisfactory, pupils from the schools so approved who are recommended by the head-master are received into the university without examination of any kind. Lately, four associations have started to do this accrediting work for all the States, and these keep lists of the schools approved by their visiting officials as of a standard

sufficiently high to merit their graduates being admitted into the higher institutions represented, including the university, without any further tests.

Where entrance examinations are held, as at Harvard, Yale, Massachusetts Institute, etc., they usually take place in June and September, so that a student failing in June may have another chance in September. Under certain conditions school certificates are accepted in lieu of some of the subjects of examination. At Massachusetts, the certificate of the college entrance examination board alone is accepted as satisfactory evidence of the requisite scholarship to warrant admission to the first year's work. Other than this, no certificate from a preparatory school admits a student without examination. There is a committee of the faculty on preparatory schools whose function is to visit such schools, to show the interest which the institute feels in their work, and by consultation and discussion and mutual concession to bring about a high standard of entrance requirements, without imposing undue hardships on the teachers in the secondary schools. At the present time the committee proposes to have occasional meetings of secondary teachers held at the institute from time to time at which the general question of secondary education, with special reference to preparing pupils for their own institution may be fully, fairly, and fearlessly discussed. The purpose of this committee is to convince the secondary schools of the desire on the part of the college for interested, sympathetic co-operation.

The usual fee or "tuition" for the universities and institutes ranges from £30 to £40 a year. At Yale and Harvard it is £30, at Columbia £40, at Stevens Institute it is £30 for local students, £45 for outsiders; at Drexel it is only £10 to £16, while last year Massachusetts Institute raised its fees from £40 to £50. There is a very large number of colleges where the tuition is free. In the State universities the fees are low. Michigan imposes £2 for matriculation, £7 for instruction in the case of students from its own State, £9 for others.

The courses, as a rule, are laid out for four years, and the session lasts from October till June, allowing three months' vacation. At some of the colleges summer courses are held, which some of the members of the staff conduct at stated additional salaries.

The hours at Massachusetts are 9 a.m. to 5 p.m. daily, except on Saturday, when they are 9 a.m. till 1 p.m. Each student has there to attend 720 hours in a session.

Degrees are usually given in the colleges, not on the result of a final examination, but on the record or gradually accumulated results of all the examinations, with a thesis at the end of the course on a subject suggested by the professor. Indeed, a final examination, as the basis for degrees, scholarships, and fellowships, is unknown. In the thesis the student is thrown on his own resources both as to the method of treating the subject and the points to be investigated.

Evening schools are common, but more elementary in their work and not nearly so well filled. In Boston they are very good, and largely attended by foremen and others. Massachusetts Institute has classes which are small. Members of the day staffs usually act as heads in these schools with outsiders as their subordinates.

Most of the large institutions in the States consist of different buildings that are sometimes a considerable distance apart, as at Oxford. The point in which, more than anything they rival, and in many instances far surpass ours, is their excellent equipment. No expense seems to be spared to make them in this respect as serviceable as possible. Indeed, some appeared to me to be over-equipped, the stock of apparatus being so great that it was not likely to be ever all used and much of it was rather a hindrance to the right manipulation of what was essential and necessary. This cannot be said of Armour Institute, Chicago, which is well fitted up without being overdone. Nor yet can it be asserted of the engineering rooms of Columbia University, where the equipment is not superior to our own. One thing which impressed me favourably in going through the various institutions was that a great deal of the apparatus used was either presented or given at large discounts by outside firms. This, in itself, is a striking evidence of the interest which the manufacturers take in the college work.

In addition to being better equipped, the colleges have far more instructors than we have. On visiting Massachusetts, I found a teacher (including all professors and instructors) for every 10 or 15 students. In the physics department of Columbia University there are in all 14, consisting of professor, adjunct professors, instructors, tutors, and assistants.

Many hold that the colleges should increase their salaries in order to make sure that they attract the very best men available for this important work. As it is, the professors' teaching emoluments are not usually their only income. Superior men are induced to accept collegiate appointments because of the well-equipped laboratories at their disposal, and because as engineering professors they are given every opportunity and encouragement to do outside work. It is believed that thus they keep in touch with the various lines of progress in their profession. In Columbia University, if the work is done inside with the college apparatus, 50 per cent. of the remuneration goes to the professor, and 50 per cent. to the college; if outside, the professor gets all the fees. In the Stevens Institute the college retains only 10 per cent. of the fee for inside work, and none at all, as in the other case, for outside work.

In universities, the president is a man of affairs, but in colleges he is generally a college-trained man; in either case he must have administrative ability. The instructors are always practical men.

Once appointed, American professors have very considerable authority in matters relating to the curriculum and the work and standard for graduation. As the granting of degrees and scholarships depends so much upon the student's record, the conduct of such class examinations as there are, is practically in the hands of the professors, who are not accustomed to call in the aid of any outside examiners, as in this country. A further privilege they enjoy is their release from duty every seventh year, which is given them as a holiday.

The method of teaching, general in the colleges, except those of university rank, is that known as "recitation." It consists in prescribing lessons from a text-book on which the student is examined by means of question and answer, with a good or a bad mark in the record book. I have met professors who do not think

highly of this system, and who, while they prescribe work out of a book, simply make each question they put the basis of part of an explanatory lecture. Oral questioning and inter-discussion they hold to be the most effective method, more profitable than either recitation or lecture.

While the training is of a high order, it did not impress me as better, or in some cases, even as good, as that given in our own institutions. There is one feature of it, however, which is in marked contrast to our practice, and that is, the amount of knowledge of machine work the students get. The aim in every technical college appears to be to have a machine of every kind used in manufacturing establishments, so that the student may have before leaving a certain limited acquaintance with these. Thereafter, when he enters on manufacturing work, he meets no machine with which he is not already more or less familiar. In our own country, on the other hand, manufacturers have hitherto discouraged such knowledge on the part of technical students, and have insisted on the idea that a knowledge of machine tools can only be properly acquired in the workshop, and not in the college.

Other pleasing features I noted in connection with the American colleges were the departmental libraries, the gymnasiums, and the study of technical journals.

It is usual to have a specialised library, with separate librarian, for every department in the building. This, of course, costs far more money than the method common in this country of having one only for the whole college; but if it can be attained, it is certainly highly desirable. All the scientific journals bearing on its work are received in each department, and distributed among the students for perusal. Once a week the readers meet, and each has to give a summary or abstract of the more important papers in the periodicals assigned to him. At Massachusetts Institute, the electrical engineering students have a society which meets about once a fortnight throughout the season and is addressed at these meetings by engineers and other experts who have accomplished something in any special line of engineering work.

Not less interesting, in its own way, is the work of the gymnasium, where physical training is carried on to ensure that the student shall, as far as possible, possess health and soundness of body as well as technical skill. In the Universities of Yale and Michigan, such training is compulsory during the first year of attendance, but is usual throughout the whole curriculum. Exercises with dumb-bells, Indian clubs, pulley-weights, vaulting horse, horizontal and parallel bars, swinging rings and pole vaulting, constitute part of the course in most of the colleges, which have also associations for outdoor games.

The correspondence schools are a feature of American instruction of which I heard a good deal. They do not profess to educate a man, but they aim at making him more efficient in his work, and hence of more value to his employer. The Scranton International School of Correspondence, which I visited, began with mining. Now it has on its books the names of 135,000 persons who receive instruction in all sorts of subjects. Mr. Foster, the founder, employs 1,100 in Scranton correcting papers, composing text-books, drawing diagrams and making simple apparatus. He has also a field force of about 1,000. These are travellers catering for students, who are paid a salary and commission in the usual commercial way. The

students hail from all parts of the world, showing that the system appeals to a very large class. This school alone has had about 600,000 since it started. The fees range from £8 to £18 for a course, which the student must complete in five years. Mr. Foster told me that from October till June the average number of papers per month was about 68,000, and that each student sent in on an average four papers per annum. In Pittsburg there is a similar school, with an enrolment of 30,000 in one year; and there are other large institutions in Boston, Chicago, and New York.

I found the text-books which I examined rather superficial, and the questions asked such that one could answer them from the book without any real study of the subject; but when it is taken into account that though in the Scranton School the average age of the students is about 26 years, and more than 80 per cent. know nothing of fractions when they begin, it is obvious that the text-books prepared must be simple. Only the plainest language is used, and many facts, principles, and processes that would otherwise be hard to understand are made clear by the use of zinc etchings and half-tone illustrations.

Over-rated this correspondence system may be, but the enormous enrolment shows the demand for special instruction of a technical character that is not yet fully provided for by the ordinary schools and colleges. Wage-earners, failing to find within their reach proper secondary schools, take the only method offered them of gaining a knowledge of the theory of their trade, and there are so many cases where the system of instruction followed has enabled students to advance from the lower branches to the complete mastery of their work, that it would be idle to deny the benefits that have accrued to them from this method of training.

It is well known in the leading countries of Europe that America has been peculiarly fortunate in the vast sums of money she has received from wealthy men for educational purposes, but it is perhaps not so fully realised that these benefactions, however princely, have not been sufficient for the enormous work which the institutions of higher learning have been called upon, and have undertaken to perform, and especially is this the case with the schools of engineering. Hence the scope afforded other particular agencies such as the correspondence schools. Yet, if education continues to be "the chief industry of the nation," as Mr. Choate recently characterised it, and if the public men and millionaires continue as interested and generous as they are now, the United States is not likely to lack the wherewithal to carry on her noble educational enterprises, and to be in this respect an example to other nations.

MAGNUS MACLEAN.

Mosely Educational Commission.

**Report of the Rev. T. L. PAPILLON, M.A., Formerly
Fellow and Tutor of New College, Oxford; Vicar of
Writtle, Essex.**

I do not write as a representative of any special department of education, or any one class of educational institutions. But having had, as a college tutor, as (for a short time) a public-school master and a frequent examiner at secondary schools, and more recently, as a parochial clergyman and chairman of a School Board, a fairly close acquaintance with the higher, secondary, and elementary education of my own country, I have endeavoured to estimate the points in which, at each stage of a general education, American theory or practice differs from our own; and what there is on the other side of the Atlantic for us to imitate or to avoid. Such inquiries, however, are subsidiary to the general question which, as I understood, was put before the Commissioners: How far is superior education the cause of the industrial progress of the United States?

This involves two questions—(1) Is American education in all, or in some, of its phases superior to that of other countries? (2) Granting such superiority, is education the chief, or a chief, factor in the industrial progress of America, as it undoubtedly is in that of Germany? The first of these two questions can only be answered in detail by experts in different branches of education. To the second I will attempt a general answer, though I confess that the more I look at it the more difficulty it presents. If my remarks sometimes take the form of a comparison between American institutions and our own, it is not that I conceive the drawing of such comparisons to have been the object of our inquiries, but that it is easier to convey one's impressions by a reference to familiar standards. More widely diffused education, particularly above the elementary stages, there certainly is in America. The opportunities for a sound general education up to the age of 17 or 18, and for efficient technical instruction, are more readily accessible to all than is at present the case in England; and thus far it may be said that the average American has a decidedly better chance of self-improvement than the average Englishman. What is perhaps even more important, he has a greater belief in the value of education; and this possibly tells in greater average intelligence of the industrial classes. But that education is the only, or even the chief, cause of industrial progress is not so clear. Good education, and plenty of it, is no doubt helping already, and may help yet more in the future, to keep the Americans in the position of commercial supremacy that they are now winning for themselves; just as our own present indifference to education, unless soon remedied, will endanger the position that England holds. There are other equally potent causes of American success. The energy, inventiveness, and "hustle" of the American character; the early hours and absorbing

claims of business; the universal high-pressure race for wealth; the close touch between employers and employed, and readiness to act upon the view that capital and labour have common and not antagonistic interests*; and, I am afraid that we English must add, the greater sobriety of all classes among them—these are pushing America to the front. I doubt whether, man for man, the American workman is superior to our own; Americans, I think, are ready to admit that he is not. But I suspect that the American employer is more up-to-date, more adventurous, more accessible to his men, than employers sometimes are in countries where the social distinctions between class and class affect all relations of life; for in the States all citizens are in theory equal, and in practice have often been educated side by side. They are also keener to adopt new mechanical improvements than our captains of industry sometimes are. While the English manufacturer is considering whether it will be worth his while to invest in some new labour-saving appliance, the American has discarded his old machinery, put in the new, and begins to leave his rival behind. Education, no doubt, has something to do with this. It quickens the employer's intelligence, and broadens his view; and it gives him more intelligent men to deal with. But education in America, as we see it to-day, is of too recent growth to account altogether for the great industrial development that has been contemporary with it, and is largely the work of men to whom, in their youth, such full educational opportunities were not available. This does not, however, affect the moral for ourselves, that we must "wake up" if we are to keep our place; and that one very important feature in such awakening must be an all-round improvement of our educational system, not necessarily on American lines, but with a due portion of American spirit.

My answer, then, to the general question above stated is that education, though a contributory cause, has not hitherto been the chief cause of American industrial progress. It has shared, and is sharing in that progress; and we might answer the question in another way, by saying that the American character is quite as much the cause as the result of educational development in the States.†

For the history of educational progress in America, some acquaintance with which is necessary to understand its present condition, and the attitude towards it of public opinion in the States, a reference must suffice to Vols. X., XI., of the "Special Reports on Educational Subjects," issued by our own Board of Education;‡ and to a portion of the article "Education," in Vol. XXVII. of the "Encyclopædia Britannica" (pp. 677-682). Less accessible in this country, but the fullest and most complete account of American education up to its date, is the series (in two

* This is by no means universally true, as the strike records of New York, Pittsburg, Chicago, and other large cities testify. But it has many conspicuous examples, as, *e.g.*, that of the "National Cash Register" factory at Dayton, Ohio, visited by Mr. Mosely and some of the Commissioners.

† This was the view taken by a high American authority, the President of the North-Western University at Chicago (Dr. E. B. James), in an address delivered at a banquet given to the Mosely Commission by the leading merchants of that city; a copy of which he has since kindly forwarded.

‡ Especially in Vol. X., the introductory remarks by the late Sir Joshua Fitch; the papers (3-9) on "The City School Systems of the United States," and (13-14) on "The Training of Teachers"; and in Vol. XI., papers 1-3, dealing with "Secondary Education"; 6, with "Commercial Education"; and 9, by Professor M. E. Sadler, on "The Contrast between German and American Ideals of Education"—an admirably suggestive paper.

volumes) of special monographs prepared for the United States Educational Exhibit at the Paris Exposition in 1900.* Speaking generally, educational progress in America dates from the Revolution. The early Dutch settlers brought over with them from the Netherlands ideas of free popular education, which, so long as English influence was paramount, bore little fruit. But since that influence has been withdrawn, education has grown and expanded as an expression of the popular will, aided by the encouragement and sympathy of the Federal Government; its administration being left to the Governments of the several States, each of which administers its own educational laws, and levies its own taxes for the support of its schools. Education has throughout had the people at its back and the support of those in authority to an extent long unknown, and still imperfectly realised in England. But its greatest development, and all the excellence of its present condition, is subsequent to the Civil War. The common school system of elementary education supported by public taxation, the free public high school system, and the university system, as seen to-day in its chief examples—Harvard, Yale, Columbia, Cornell, Johns Hopkins, Chicago, and others; or great State universities such as Wisconsin and Michigan—are the creation almost of the last 25 or 30 years. This extraordinary growth and progress—quite as extraordinary, in its way, as the contemporary industrial progress—has been made possible by the goodwill of the people. There lies the real driving power. If American education is to-day alert, vigorous, progressive, and popular, it is because the “people love to have it so”; because they have recognised that education is a vital necessity for national well-being, and the most remunerative investment of public money. If we in England still lag behind other nations in educational progress, it is because we have not yet learned to care seriously about it, and grudge instead of welcoming expenditure upon it. This is the first moral for ourselves; perhaps it is really “the conclusion of the whole matter.”

But if in popular sympathy and support American education enjoys one great positive advantage, it has also two negative advantages, by no means unimportant. It has no “religious difficulty”; and it is comparatively free from the tyranny of examinations. Religious education has been excluded from the scope of the Mosely Commission, and I, therefore, express no opinion† upon either the causes or the effects of its exclusion from the public schools of America: but the freedom from the examination system, which weighs so heavily upon secondary and higher education in England, is an advantage for which we may well envy Americans. In our elementary schools we have to a large extent exercised the examination fiend; but our whole system of public school and university education has got into a vicious groove of incessant competition, which represses individuality on the part of teachers, discourages experiment, and elevates subordinate motives for industry into undue prominence; while the strain of constant examination sends many young persons out into life intellectually exhausted, with no conception of seeking learning for its own sake. Examination, useful and necessary within due limits as a test of

* Published by J. B. Lyon Company, Albany, N.Y., and edited, with an introduction, by Dr. N. Murray Butler, President of Columbia University, one of the first authorities in the States, to whom the Mosely Commission is indebted for valuable help and guidance.

† I have dealt with this topic in two papers published in *The Guardian*, January 27th and February 3rd, 1904.

progress, is unfit to be the main object of education. It is a good servant, but a bad master; and from its tyranny American educationists have wisely kept themselves free. The universal belief in education for its own sake has perhaps made it easier for them, than for us, to dispense with external motives. It is easier also to forego the aid of scholarships and other prizes as an incentive to learning under a system which claims to provide gratuitously for every citizen sufficient education to fit him for life. We who, under the different conditions that prevail in England, limit free education to its elementary stages, must have some means of assisting those who have the ability to rise higher, but no means of supporting themselves at school or college. This use of scholarships and prizes is necessary for us, and will have to be considerably developed by our new local authorities. But if the whole system of college and public school scholarships and prizes, involving perpetual examination from the age of 9 or 10 to the university degree, could be dropped into the Atlantic, America would not care to fish it out, and England would be wise to leave it there.*

Education in the United States, whatever be the local difference of administration, rests upon the principle that every citizen, male or female, irrespective of class, creed, or fortune, is entitled to equal opportunities, and that it is the business of the State to provide those opportunities by education fitting men and women for life. Free education up to the age of 18 is universal; for eight years in the "common," or elementary schools, divided into four "primary" and four "grammar" grades; and then for four years in the "high" schools, the close of which is spoken of as "graduation."† Then follows a college or university course of four years, culminating in an academic degree; this also being provided free in the newer "State universities" of the West, but not at the older universities of the Eastern States. After the academic degree, according to strict sequence, would come the professional course for law, medicine, engineering, etc., but there is a growing tendency, under the increasing pressure of practical demands, to shorten the period of general culture, and to incorporate with it a certain amount of commercial and professional training. American educators, in fact, are confronted, perhaps rather more acutely than our own, with the same problem of reconciling the "humanistic" with the "utilitarian" view of education. To this question I will return in speaking of the universities. At present I would note that the scheme of public education thus briefly outlined seems to be eminently practical and popular. It springs from the people, is directed by the people, and serves the needs of the people. It rests, as Mr. Choate, the American Ambassador, pointed out in his address to the last summer meeting of University Extension students at Oxford, upon a broad foundation of the common schools, from which rises, co-ordinated in its various stages, culminating with the universities, and including as it rises all forms of manual and technical training, the pyramid of national education. The absence of any horizontal stratification of society into different classes, with strongly marked barriers of habits, ideas, traditions, and feelings, has made it easier

* In this paragraph, and in one or two others which follow, I have reproduced the substance, and sometimes the actual words, of communications to *The Times* and to the January number of Mr. Murray's new periodical, *School*, respecting the Mosely Commission.

† Full details of the organisation of American schools may be found in the volumes of "Special Reports" (X., XI.) of our own Education Office, already referred to above.

to regard, and to carry out, education as a continuous whole from the bottom to the top. "From the gutter to the universities" is not, as here, an artificial ideal of education; it is the natural course open as a matter of right to every citizen of the Republic.

It is agreeable to this democratic origin and constitution of American education that it seems to be trying at every point to come into close contact with life and the needs of life. The "common" schools are, as anyone who sees them at work can tell, a great unifying force in the life of the nation, always engaged in stamping a mass of heterogeneous elements with the hall-mark of American citizenship. Whatever else they teach, they teach patriotism and some knowledge of civic duty*; and we might well imitate them in this, and make national education a corner-stone of imperialism, as Americans make it a corner-stone of their democracy.† The high schools, to which a certain proportion pass on from the elementary schools, continue the process of providing for the youth of both sexes a sound general education as a preparation for life, combining with it in increasing measure the beginnings of professional training. At the "Central High School" of Philadelphia, for example, one of the largest and most sumptuously equipped high schools in the States, educating about 1,600 boys, there is a system of "elective" courses which gives the greatest possible variety of studies. There is a "classical" course; a "Latin-scientific" course, omitting Greek; a "modern language" course, with no Greek, and Latin omitted after the second or "sophomore" year; and a "commercial" course, including economics, political science, and business technique; while for the Latin-scientific and modern language courses is prescribed a further series of "electives," including mechanical and electrical engineering. How far this great variety of studies conduces to thoroughness in any one study is another question. The average standard of Latin and Greek teaching and attainment in the upper classes of American high schools is at present below that of an English public school‡; nor does the teaching of French and German seem better, or more up to date, than our own. What the case is with mathematics, science, and manual training subjects, I leave others to say. One striking exception, so far as I have seen, is the teaching of English, a subject almost entirely neglected in English secondary schools. I have heard excellent lessons being given by women teachers as well as by men upon such subjects as one of Bacon's Essays, or an oration of Burke; the author's words being used not merely as a vehicle for linguistic teaching and grammatical analysis, but for drawing out thought and expression; and the reflection occurred that such a method, if applied to the study of the ancient classics, might revive some of their waning credit. The teaching in American high schools, as well as their discipline, struck me as more informal and leisurely than in our own. I doubt if they get through as much work as our schools do; nor do I think that a lad of 18, in

* See an account of the flag-saluting in New York schools, *Times*, October 28th, 1903.

† An admirable syllabus on "The Life and Duties of the Citizen," drawn up under Mr. Acland's administration, originally part of a now defunct Evening Continuation School Code, is only accessible in a Blue-Book giving syllabuses, etc., for schools other than elementary; and but little attention is yet drawn in either elementary or secondary schools to the details of our Imperial heritage.

‡ It should, however, be noted that the study of classics (especially Latin) is making considerable progress in American secondary schools. See statistics cited by Professor G. G. Ramsay in his address on "Efficiency in Education," pp. 17-9. (James MacLehose and Sons Glasgow.)

the first class of an American high school, can compare in the extent of his reading or the scholarly finish of his work with boys from the head of Eton, Rugby, or Marlborough. But our great secondary schools cater for a select few, theirs for the whole people. They give an equal chance of a sound education to every boy or girl, irrespective of class, creed, or means; and on the whole they are successful. We claim to provide, not always with success, a superior article for those who can afford to pay for it. They provide fairly well for the intellectual needs of the average citizen, but, perhaps, hardly enough for the training of special ability. We give a good education—better, I think, than theirs—to the few who can profit by it, but more or less neglect the mass of ordinary minds. The teaching in the larger American high schools seems to be more professional in character, with less of the tutorial element and personal intercourse of teacher and pupil, and, consequently, less prominence given to the formation of character as a chief aim, than in the traditions of English secondary education. This may be due partly to the influence of German educational ideas, of which many traces are visible; partly to the fact that, with the great variety of subjects in curricula so much determined by the “elective” principle, the tendency is for teachers to be specialists, each taking a series of classes in one subject rather than, as with us, one class in the bulk of its work. The lesson for us of the American high-school system lies, as I think, not in methods or quality of teaching, which are not superior to ours; nor in the provision of free education above the elementary stage, which is not as yet called for in England; but in the greater variety of its curriculum to suit the practical needs of life, and in the fact that it places within the reach of all a sound secondary education in preparation for special colleges, and for the duties of citizenship. We in England want our new educational authorities to see that there is gradually provided, under conditions suitable to this country, something analogous to the excellent high schools open to every young American who desires secondary education.

I do not, as I have said above, suggest that this provision should be made gratuitously, as in the United States. Nor do I expect that we could attain the same lavish expenditure upon buildings and equipment that is apparent in most great American cities.* We had better first imitate them in making more general provision for the training of teachers; until it becomes a matter of course here, as it is there, that no one shall teach in any public school without professional qualifications, and that a “normal” or training school is an integral part of the educational scheme for every county or large city area. We also need to revise our conceptions of the value of such highly skilled work as teaching. Even with allowance made for the higher cost of living, teachers in secondary schools are rather better paid in America than in England, with the exception of boarding-house masters at the public schools.† But the expenditure upon salaries in general is not commensurate

* The “Central High School” building at Philadelphia, referred to above, is stated to have cost 1,600,000dols. (£320,000); and at Pittsburgh we were told that 300,000dols. (£60,000) had recently been expended on the purchase of a site for a new high school. Such huge figures seem almost incredible. Yet I see from a recent report of the Superintendent of School Buildings for New York City that the cost per pupil of the “Wadleigh” High School for Girls (600,000dols., or £120,000), and the estimated cost of the “Morris” High School in course of construction (583,000dols., or £116,600), is “less than one-half of the cost of the high school buildings in other cities.”

† These, however, receive large incomes as lodging-housekeepers, not as teachers.

with that upon buildings and plant: and complaints are made in many quarters that country schools in particular are ill-staffed and their teachers underpaid. I saw, however, very little of rural schools, and can form no opinion on this point. Mr. Coward's report contains some details of the various salaries paid.

It should be noted that side by side with the public high-school system of the United States there exist a number of private "preparatory" or "fitting" schools,* to which parents, who prefer it, and can afford to do so, may send their children on payment of fees. Such schools receive no aid from public money. In large cities they are generally day schools often connected with and partly supported by religious bodies, and including in their curriculum systematic religious teaching. In country districts they are boarding-schools, administered and organised with more or less approach to English models, and with fees, in some cases, equal to those of the most expensive English schools.† The number of such private schools is said to be increasing; and as an aristocracy of wealth and comparative leisure grows, and practically, if not in theory, disregards democratic equality, the demand for something more select than the free public schools is likely to increase; for human nature is the same everywhere. Among them are many admirable schools for girls; but of these I must leave others to speak. Nor do I feel able to offer any opinion on the quality of the technical instruction given in such excellently equipped and lavishly supported institutions as the Pratt Institute at Brooklyn, New York, the Drexel Institute at Philadelphia, the Massachusetts Institute of Technology at Boston, and the Armour Institute at Chicago; that of the "commercial courses" in operation, *e.g.*, at the high schools of Boston, Philadelphia, and other cities, or the "Business High School" at New York; or that of analogous courses offered by many colleges and universities—*e.g.*, the "Wharton School" at the University of Pennsylvania, the "College of Commerce and Politics" at the University of Chicago, or the "Department of Economics" at Harvard.‡ The general impression left by even a slight acquaintance with this side of American education is that, while here and there we have schools of technology equal, if not superior, to any in the United States, the opportunities for technical and commercial instruction fitting for business pursuits are there more widely diffused and more generally accessible than in England; and to this extent it is probably true to say that better education tells in the commercial competition between the two countries.

Turning to higher education, we find at work in all American universities the same tendency to bring education into closer contact with the needs of practical life. The universities, indeed, more than any other educational institutions in the States, are, at present, the scene of perpetual, almost restless, experiment. Even the older among them have little of the conservative spirit and

* A "preparatory" school in America is one that prepares for college, and corresponds to a "public" or "grammar" school in England.

† *E.g.*, Lawrenceville, New Jersey; St. Paul's, Concord, New Hampshire; Groton, Massachusetts (called an American Eton); Shattuck, at Fairbault, Minnesota, in the "Middle West"; and Belmont, on the Pacific Coast, not far from San Francisco. An account of these, with some others, is given in a volume entitled "Some Famous American Schools," by Oscar Fay Adams. (Boston: Dana, Estes, and Company.)

‡ For details under this head I may refer to an excellent and instructive paper on "Commercial Education in the United States" by Mr. P. J. Hartog, of the Victoria University (now Registrar of the University of London), in Vol. XI. of the Board of Education "Special Reports."

obedience to social and educational traditions which is of the essence of Oxford and Cambridge. No visitor to Harvard or Yale, any more than to one of such newer growths as the University of Chicago, could imagine their becoming "homes of lost causes and impossible beliefs." Their rulers are in the van of educational progress.* They are using to the full an unbounded liberty of experiment with the university curriculum, adapting it now here, now there, to the demands of practical and business life. At Columbia University, for example, besides professional schools of medicine and law, there are schools of mines, engineering, and architecture, to which will shortly be added a school of journalism, founded by the proprietor of a New York newspaper; and it is worth noting, as an illustration of the practical spirit animating educational experiments, that the teachers of engineering are not only allowed, but required, to be engaged in the practical work of their profession, so that their instruction may always be up to date and abreast of engineering progress. The great University of Harvard, while jealously upholding the literary side of education and ideals of culture, has, besides its law school (said to be one of the best in existence), a dental school, a school of veterinary medicine, and a school of agriculture, and grants degrees in those subjects. The graduate department of Yale, in addition to degrees of Master of Arts, Master of Science, and Doctor of Philosophy, offers a doctorate in mechanical or civil engineering. The North-Western University of Chicago, whose headquarters are in the suburb of Evanston, has schools of law and of dentistry in the heart of the city, in which budding lawyers and dentists are qualifying, as part of their university course, for their professional work. The whole thing is intensely practical—possibly, too practical for the retention of a high standard of liberal education and traditions of culture; for the pressure of commercial life seems to be driving the universities to shorten or whittle down the academic and literary side of their training. To an outsider it seems as if some of the universities and colleges were trying to do too many things in too great a hurry, without taking pains to define and consolidate the foundations of liberal culture which a university training is usually supposed to guarantee. Despite their life and energy, and the interesting nature of their educational experiments, it may be questioned whether American universities are at present altogether to be relied upon as a guide for those who would reform our own.

There are, it should be remembered, two main conceptions of the purpose and function of a university: (1) that it exists to train servants of Church and State; (2) the promotion of learning and research. Our own ancient universities, through all their long history, have creditably fulfilled the first object†; as also have the older American universities, such as Harvard, Yale, or Trenton. The other, which has been the chief aim of German universities, has partly, through their influence, been a leading motive of recent university development in America; and the manifold experiments—many of

* If capable men, they also take their place among the leaders of civil and political life. The late Mayor of New York, Mr. Seth Low, the champion of purity of municipal administration against the influence of "Tammany," was previously President of Columbia University, and more than one United States Ambassador to Europe has been an eminent educationist.

† As expressed, for example in the "Bidding Prayer" used before the University Sermon—"That there may never be wanting a due supply of persons qualified to serve God in Church and State."

them lavishly endowed—which have marked and are marking that development, are an attempt to realise one or other of these two conceptions, or, more often, a combination of the two by the organisation of undergraduate and post-graduate study. The former is the function of the “college,” the older, typical degree-giving institution, which is the nucleus of nearly all American universities. The latter, with training in “research,” is now generally accepted as the true test of a university status. Accordingly, at the older universities in the Eastern States, such as Harvard, Yale, or Columbia; at the leading State universities of the Middle West, such as Michigan or Wisconsin; and at great private foundations like the Chicago University (a marvellous growth of only ten years) and the Leland Stanford University in California a combination of the college and the university proper, expressing the two main ideals above referred to, is becoming the typical form of organisation for higher education. From the “ruck” of colleges and so-called universities all over the States,* which have in the past brought some discredit upon American degrees, there is gradually emerging a limited number of true homes of learning and research, which satisfy the somewhat exacting definition of “a place where teaching which puts a man abreast of the fullest and most exact knowledge of the time is given in a range of subjects covering all the great departments of intellectual life.”†

It seems as if the successful organisation of post-graduate study and research will “save the situation” as regards the preservation of a high standard of liberal culture by the American universities, which in their collegiate or ordinary academic function of sending young men into life with a university degree, are being more and more pressed to make that degree an index of “practical” and professional training. It is here, too, if anywhere in the American university system, that there lies a lesson for our own universities; but whether it can or will be applied is as yet uncertain.

I very much regret that the itinerary of the Commission did not permit me to visit Cornell University (at Ithaca, New York State), or either of the State universities of Michigan (at Ann Arbor, on the railway between Detroit and Chicago), and Wisconsin (at Madison, the capital of that State). The future of education in the Middle and Further West is likely to lie more and more with the State universities maintained out of public funds, and forming the coping-stone of the system of public education. One especial interest in these State universities of the West, as also at Cornell, is the teaching of agriculture, for which very thorough provision has been made. The Americans (and still more, the Canadians) recognise more keenly than we at present do in England that the highest and most scientific education is necessary for the business of agriculture, the oldest, the greatest, and the most widespread of industries. It is found, too, that the provision made for such instruction—*e.g.*, at the University of Wisconsin—is gratefully received by agriculturists, and contributes largely in an agricultural State to the popularity of the State university.‡

* There are said to be 500 such institutions—half of them founded since the close of the Civil War.

† Bryce, “American Commonwealth,” II., p. 667 (ed., 1895). The test would be a severe one for our own great universities: it certainly puts out of count all but a comparatively small number of American institutions which claim that title.

‡ See Board of Education “Special Reports,” Vol. XI., p. 420.

To sum up:* what has struck me most forcibly in a short and imperfect survey of a wide field is first of all the attitude of the American people towards public education as a prime necessity of national life, for which hardly any expenditure can be too great; and next, its eminently practical and popular character. There is more co-ordination of its successive stages than we have hitherto seen in England. From the elementary school to the high school, from the high school to the university, and on to special professional training, the education of the future citizen is in theory, and to a large extent in practice, a continuous whole, marked out and provided by the State. Opportunities for secondary and technological instruction are more widely diffused and more generally accessible than can at present be said of our own country, though, as I have intimated, neither the methods of teaching nor the standards of attainment are, as a rule, superior to ours. The educational systems of America have the merits and defects of much else in that great but as yet unfinished country. They are full of life and energy; freely, not to say rashly, experimental; innovating, renewing, abandoning, sacrificing, now one point, now another, whether of ideas or practice, in the effort at growth and development. They are less systematically and scientifically thought out beforehand than the more symmetrical systems of continental Europe; but they are, perhaps, for that very reason more suggestive to ourselves, to a free people feeling its way along the same road, and realising, as we are beginning to do, that it is not by transplanting the ideas and methods of other nations, but by improving or creating our own, that England must work out its educational salvation.

T. L. PAPILLON.

* I have transcribed this last paragraph almost *verbatim* (by kind permission of Mr. Murray) from the paper contributed by me to the first number of *School*, January, 1904.

Mosely Educational Commission.

Report of Mr. HERBERT R. RATHBONE, Member of the Liverpool Education Committee, and Vice-Chairman of the Elementary Schools Management Sub- Committee.

In the space which it has been found possible to allow each Commissioner, I shall be quite unable to give an account or just appreciation of the educational institutions visited while we were in the United States, or even adequately acknowledge the great kindness and hospitality with which we were everywhere received. It is no exaggeration to say that everyone we met, from the humblest member of society to the President, appeared anxious to do all in his power, often at considerable sacrifice of time and convenience, to facilitate our inquiries and make our tour a success. An attempt to express our great appreciation of this will, no doubt, be made in the general report which is, I understand, to be signed by all the Commissioners. I trust, therefore, that as the space at my disposal is very limited, the omission of any special reference to those to whom I was particularly indebted will not be considered discourteous nor ungrateful.

The great difficulty in writing such a report as this is, that it is impossible, for the reasons I have given, to describe in detail the impressions formed of the different educational institutions visited, and to generalise is dangerous.

Although I was in the United States for about ten weeks, travelling as far West as Denver, and as far South as New Orleans, stopping at a considerable number of places for several days, I saw only a very small proportion of all those where the institutions would have repaid a careful study. Even in the towns at which we were able to stop, we could, as a rule, see only a small part of the educational work carried on, and that very hurriedly. For this reason, and also because the organisation and character of the work in nearly every State and city differs widely from that in other States and cities, it is, as I have said, except on a very few points, dangerous to make any general statements. In endeavouring to give the impressions I have formed, I do so fully conscious that with a longer and wider study, I might have come to different conclusions, and where I have thought the work was not as fully advanced as I expected it would be, I have probably not fully realised the great difficulties under which it is being carried on, nor fully appreciated its nature and aim.

Almost immediately after arriving in America, and still more after travelling in the vast fertile territories in the West and South, I began to realise that I was in the presence of some of the most potent forces which will, in the years to come, shape the destinies of the world. I was much struck with the energy and enterprise of the people, their boundless hopefulness, their consciousness of power and wonderful self-confidence, their ingenuity, resourcefulness, adaptability, and, above all, the rapidity and decision with

which they endeavour to supply deficiencies to meet modern requirements. Nothing, however, so excited my admiration and envy as the attitude of the general public with regard to education. The Americans believe in education, and it would hardly be an exaggeration to say that in most parts of the country there is no other question about which they feel so strongly or on the furtherance of which they are so resolutely set. One meets with evidence of this in all directions, in the astonishingly large sums of money which are devoted to education, the readiness with which the taxes necessary to raise these sums are paid, the splendid completeness of all the public institutions which have an educational influence, the determination of parents that their children shall take full advantage of educational opportunities offered, the comparatively large proportion of students who go to the secondary schools, technical institutes, and universities, the number of business men and large firms anxious to obtain the services of those who have taken a university, or at least a high school course, the munificent donations which are constantly being made by wealthy business men all over the country for educational purposes, and the mass of literature published on educational questions. One can hardly take up a newspaper, periodical, or magazine, without finding in it one or more paragraphs devoted to educational topics. I could give a very long list of specific illustrations of this enthusiasm for education which came under my notice during the tour, but as space is limited it will, perhaps, be sufficient if I mention one or two. In a number of States and towns of the West, I found more than half of the public expenditure was on education, and as far as I could ascertain, this was with the entire approval of the electors. In the Oklahoma Territory, which was only opened for settlement 14 years ago, I found that the first public buildings erected were for the common schools, and already there are established a complete common school system (elementary and secondary), training schools for teachers, and a university, all absolutely free. Go where one will in the States, one always finds the educational buildings are almost, if not altogether, the largest and best in the town or neighbourhood.

The general impression left upon my mind is, that to an extent to which it is hard for an Englishman to realise, the Americans are determined that their educational system shall be thoroughly efficient, and that where efficiency and economy are in apparent conflict, it is economy which must give way.

The next point which strikes one is that education in America is thoroughly democratic. In every State and town I visited, there are provided for the children of every citizen who cares to avail himself of them, elementary and secondary schools absolutely free of cost, and in a great many States there are also free universities. Even where the universities are not free, the fees for instruction and cost of living are so low as to make it possible for any student, however poor, to attend. At the University of Knoxville, I was assured, no less than 60 per cent. of the students are supporting themselves while at the university out of their earnings. Moreover, to a very large extent in the East and South, and almost entirely in the West, the children of all classes, rich and poor, attend these free schools. It is, I believe, difficult to exaggerate the importance of this fact in the formation of American character and the promotion of efficiency in the schools.

Elementary Schools.

Buildings.—Almost all the school buildings I visited are architecturally imposing and well planned. Great care is taken to secure proper lighting, ventilation, and heating, although the latter is very often, I think, carried to an excess. I hardly ever found buildings with rooms constructed for the accommodation of two or more classes working independently under different teachers at the same time, and whenever I did so, I was informed that the building had been condemned and would shortly be pulled down. Almost every building contains at least one large assembly hall in which the scholars are collected for the "opening exercises," to which I will refer later. The equipment of the buildings is, as a rule, admirable, the decoration being bright and in good taste. One feature I noticed in practically every school is that blackboards run right round each room at a height suitable for use by the children. These are constantly used, and it is not uncommon to see the entire class at work on them. In the infant and lower grades (standards) especially they are largely employed by the teachers for making pictures to illustrate the work in hand. It is the universal opinion of those to whom I spoke on the subject, that this liberal provision of black-board space is a great assistance to them in their work.

I was disappointed to find that, despite the completeness of the buildings and equipment in every other particular, there is in nearly every instance a lamentable want of playground accommodation. In the large cities this is explained by the great expense of land, but even in the younger States of the West, where the question of expense is not yet so serious, hardly anything is being done to supply this deficiency before it is too late. At present, no doubt, there are plenty of open spaces in these towns where children can play, but before long these will be built over, and it will then be found that the cost of land has reached a prohibitive price. In New York, and other large cities, the need for playgrounds is now being keenly felt, and something has been done in the recent buildings to meet it by utilising the basement and roof of the school for this purpose. Americans, however, are not yet fully alive to the excellent opportunities for educational work which the playgrounds and playing fields afford. From the point of view of physical culture they are most important, but it is not for this only they are valuable, as it can hardly be doubted that they afford a most excellent opportunity for the teachers to study the dispositions of the children, and assist in the development of their characters. Moreover, no amount of physical training, especially when it takes place under cover, can, in my opinion, ever be a satisfactory substitute for free, spontaneous play.

Staff.—The view which most American educators accept, and to which the practice of all their best schools conforms, is that teachers of elementary schools should have secondary or high school education, and that teachers of secondary schools should have a university education. In addition to these minimum acquirements, a period of training, varying from one to three years, is almost everywhere insisted upon. The report of the Committee of Fifteen on Elementary Education,* which includes reports on the training of teachers, the curricula of studies in elementary schools, and the

* Published by the American Book Company, New York.

organisation of the city schools system, is a mine of valuable information on this and other points. The view there expressed as to the value of training is as follows:—

“That teachers are born, not made, has been so fully the world’s thought, until the present century, that a study of subjects without any study of principles or methods of teaching has been deemed quite sufficient. Modern educational thought and modern practice, in all sections where excellent schools are found, confirm the belief that there is a profound philosophy on which educational methods are based, and that careful study of this philosophy and its application under expert guidance are essential to making fit the man born to teach.”

Everywhere I was most favourably impressed with the work of the training schools I visited, and as far as I could judge, the general excellence of the teaching in American schools is largely due to the thorough training most of the teachers have received. In the majority of the States, I was struck with the cultivation and refinement of the teachers, their enthusiasm for the profession, and readiness to better equip themselves for their work by private study, by attending classes throughout the year and summer courses at the universities during the vacation. At Chicago and some other cities, a teacher, without losing her position, can obtain leave of absence for a year to enable her to take some special course which, if satisfactorily completed, will entitle her to additional remuneration. An account of the many ways in which care is taken to secure and maintain the efficiency of the teaching staff is given in Vol. X. of the special reports on educational subjects issued by our Board of Education, but it may not be out of place to mention, as an illustration of what is being done by the teachers themselves in very many places, the arrangements I found in operation at one of the elementary schools at Brookline, near Boston. Once a fortnight the teachers meet together, and after discussing the school work, the principal sometimes gives a lesson to illustrate some improvement which she thinks may be made in their methods. After this one of the teachers reads a paper or addresses the others on some topic which they have all studied, but to which she has given special attention. At the beginning of each half-year, the topics for discussion are arranged by a committee of three, and the subjects are then allotted to different teachers for special study. As a rule two teachers take up a subject, each devoting herself to different aspects of the same question. For instance, if the topic is the life and educational work of a man, one will probably take his life, and another will discuss his educational system. This year I noticed the topics included “Fröbel and the value of his system in modern Boston life,” the lives and work of St. Francis of Assisi and several other great moral teachers, “The Italian Renaissance: its History, Art, and Literature, and the educational system which grew out of it,” “The place of Wordsworth in the life of a little child.”

In a great many places, a practice which exists of periodically sending the teachers to see the work done in other towns has been found very beneficial. I am convinced that if this were done more frequently in England, great improvements would result. The information which I received from the other Commissioners of excellent work being done in many parts of our own country, of which I knew little or nothing, was by no means the least of the benefits I derived from the Commission.

There is, perhaps, no point on which the efficiency of the school-work depends so much as the size of the classes. In Liverpool, the

city where I reside, I regret to say that it is by no means uncommon for one teacher to have under her charge 70, 80, 90, and, occasionally, even 100 children. A class of over 70 is almost unknown in America, even in the southern States, where, since the war, they have had to contend with exceptional difficulties. Superintendents and teachers to whom I spoke on the subject were practically unanimous in considering that the greatest number with which really good educational work can be done is 40, and that anything much in excess of this imposes too great a strain on the teacher and makes it impossible for her to do good work. Here I have found that, apparently, it is thought the younger the children the larger the number which can be properly placed in the charge of one teacher. In America, I am glad to say, the opposite view is almost universally held, and it is there felt that the younger the children the more the individual attention they require. Sooner than have large, unwieldy classes, Americans resort to the expedient of half-day classes; that is to say, one set of children will come during the morning and during the afternoon prepare their lessons at home, and another set will prepare during the morning and come to school during the afternoon. This, except for the kindergarten children, and, perhaps also, for the first grade, is not considered satisfactory; but American educators, as far as I could gather, are unanimous in thinking that it is better to have the children well-taught for half a day than badly taught for a whole day.

In New York, where, owing to the enormous increase in population, due to immigration, the greatest difficulty has been experienced in making the school accommodation sufficient, the average size of the class in the elementary school is 43, and in the kindergarten 28. There are, however, no less than 69,063 children attending half-day classes. That the accommodation is so deficient is much deplored, and the greatest efforts are being made to supply the deficiency. During the year which ended on July 31st, 1902, new buildings were erected, providing accommodation for 83,066 children in the elementary schools, and for 11,465 in the high schools. With classes over 30 I found it was almost the invariable practice to divide them into two, so that one-half might be engaged in desk work while the others were reciting (oral work). At New Orleans, the superintendent of education informed me that he had been making inquiries from other superintendents all over the United States on this point, that in none of the replies he received had the limit been placed higher than 50, and that the majority seemed to be of the opinion it was impossible to do really good work with more than 30.

Discipline.—As a general rule the discipline in American schools is admirable. In some places it appeared to me to be a little too rigid, the children apparently always move in perfect unison, at a word or signal from the teacher, and although this, no doubt, saves time and greatly facilitates the school work, especially in very large schools, it does not appear to me to be desirable. If the children are never left to choose between the right and wrong ways of entering the class-room or changing from one room to another, if they do the right thing simply because they have been told to do it and have no other alternative, a great opportunity of training the will is lost.

Another objection which I feel to the almost military orderliness and precision with which the children are taught to move in these

schools, is that it appears to me to impose too great a strain on them. When in schools where this kind of discipline exists, I wondered when the children were allowed any real relaxation. Surely, even at the risk of a little noise and apparent disorder, it is well to allow a little freedom of movement, laughter, and talking between sessions. Combined movements are undoubtedly useful, but it is possible, I feel, to have them too precise and too often.

It is, however, only in the schools of a few places that any objection of this kind is felt. In most American schools, although the children are wonderfully free from any direct control by the teacher, there is complete absence of anything approaching disorder. Discipline there is, but it is from within, and not from without. The children do right because they know that by so doing the school life will be more pleasant and more helpful. In such schools when the teacher directs the children to do anything, it seems as if she is making a suggestion rather than giving a command, and because the children know laughter, talking, and independent movement are not restricted if they do not interfere with school work, they respond to her suggestions eagerly. The attitude of most American teachers to the children under their control seems to be that of a guide and friend rather than a ruler, with the result that the atmosphere of the school approximates to that of a good home, the children look happy, and appear to thoroughly enjoy their school life; they are cheerful, self-reliant, and above all, alive and natural. It is delightful to hear, as I often did, the free and ready way in which the children spontaneously ask questions or offer suggestions, and the courteous, tactful manner in which the teachers answer them. To encourage self-government, self-expression, and self-activity, is, I believe, the constant aim of the teachers, sometimes, perhaps, to an extent which may leave little room for the cultivation of modesty and reverence. Other virtues, however, such as politeness, mutual helpfulness, and unselfishness, seem to thrive under the system, and I feel confident that before long, with the deep earnestness and truly religious spirit which actuates so many of the American educators, the only objections which can be raised to this new spirit of school discipline will be removed. There is, I believe, no other department of school work in which we have so much to learn from America as this new spirit of school discipline, which is most ably described and discussed in the special reports issued by our Board of Education, Vol. X., Part 1, pp. 74-94.

Of the teaching staff as a whole I can speak in terms of great admiration. Of course, there is still great room for improvement, and no one realises this better than the teachers themselves, but the excellent professional spirit which is being created, and the growing recognition by the public of the great importance of the task entrusted to the teachers, is full of promise. Although the social standing of the profession is higher than with us, it is not yet all that could be desired. For this, the inadequacy of the salaries is, I think, largely responsible, as people everywhere, and not least in America, are apt to estimate the importance of a man's work by the price it commands. That a people who are so generous in their expenditure on school buildings should not be more liberal to their teaching staff is surprising and disappointing. It is to this false economy more than anything else that the difficulty of getting a sufficient number of capable male teachers is due. Again and again I met with men who, because of the inadequacy of the salaries

and the insecurity of the tenure of office, have left the profession, or intend to do so as soon as a favourable opening in some other walk of life is offered to them. I did not meet a single American educator who regarded with satisfaction the great and growing preponderance of women teachers. Greatly as they appreciate the splendid work done by the women teachers, especially in the elementary schools, the general opinion of all with whom I discussed the subject seems to be that the work of education, even in the elementary schools, should not be left entirely in the hands of women; that in the elementary schools there should be some male teachers, and that in the high schools the male teachers should predominate.

Methods.—Of the teaching methods in American schools it is, I believe, very easy to come to an unfavourable conclusion somewhat unjustly. In order to judge them fairly one must, I think, first realise the objects American educators have in view, and the difficulties with which they have had to contend. The essential feature of the system is the mastering of the contents of certain well-selected text-books, which, as a rule, are very well written, and before being used are submitted to a severe criticism from a host of critics, who are very often able teachers. No doubt this system was first adopted because it was the easiest and most suitable for use by the partially educated and almost untrained teachers, but in the hands of well-educated and skilful teachers I am not yet satisfied it does not afford opportunities for excellent work. With a few teachers it is simply a system of memorising the contents of the text-book, but with the majority this is not the case. Questions are carefully considered beforehand by the teacher, and are designed so as to probe the knowledge and stimulate the thought of the children. Children, when well taught by this method, seem to catch something of the spirit of research, and feel that through books one of the avenues of knowledge has been opened to their unaided efforts. Librarians in charge of the children's departments in many of the public libraries I visited assured me that children of all ages frequently came to them for advice as to books which would give them additional insight into some subject they were studying in class.

The problem which the American educators seem to me to be attempting to solve is, how to give the children those qualities which will make them good citizens and competent workers, men and women who will be resourceful, self-reliant, and adaptable, who will be able to observe accurately, record their observations correctly, compare, group, and infer justly from them, and express cogently the results of these mental operations. They desire, no doubt, that in addition to these qualities and others that might be mentioned, the children should have sufficient knowledge to enable them to deal effectively with the problems which they will have to face in after life, but it is the qualities and not the knowledge to which they appear to attach the most importance. What the boys and girls are, not what they know, when they leave school, appears in their consideration to be of the first importance. It is useless, they say, to teach children to read if you do not also teach them why and what to read, and if, when they leave school, they have no desire to read anything of an improving character. They desire, of course, that the boy shall have the knowledge as well as the qualities, and they hope, no doubt, before long to be able to so

alter their teaching methods as to effect both objects, but in the meantime they think it is better to concentrate all their efforts on the formation of character, even if in so doing they may give but little knowledge, as when a child leaves school, if he has been rightly trained, he will soon acquire most, if not all, of the knowledge needful to him. I do not think it can be doubted that no small measure of success has attended the efforts of American educators to attain this end.

I have spoken to many business men, English and American, who have offices or works on both sides of the Atlantic, and nearly all agreed that as a general rule the American boy on leaving school, even if he does not know more, which he often does, is more intelligent, resourceful, adaptable, harder working, and more anxious to continue to improve his education, than is the English boy of a corresponding age. On attending the American libraries one cannot, I think, fail to be struck with the excellent class of literature which is in constant demand by members of even the humblest ranks of society. The attendance at public lectures, evening classes, summer courses at universities, and other similar educational institutions, is enormous. From these facts and others of a similar character, I cannot help feeling that the American people, as a whole, do not consider their education at an end when they leave school or the university, but realise that they must go on learning all their lives; or, to put the point in another way, the American does regard the period he spends at school or university as something separate from the rest of his life, but as part of his life. The English boy, on the other hand, too often thinks that he is only beginning his life when he leaves school, the time spent at school is something that has to be gone through, and the sooner it is over, and he has *completed* his education, the better.

The fact is, I believe, the best work of a school cannot be judged by anything an occasional visitor or examiner will see being done in the school. The teachers, who are constantly with the children, may be able to form some estimate of it, but it is only by watching the children after they have left school it can really be tested.

In order to get the training they desire for their children, American educators have introduced new subjects, with the result that the curricula are, generally, overcrowded, and nothing is thoroughly taught. They are beginning, however, to more and more realise that although some subjects are of greater educational value in the hands of some teachers, and for some children, than others, yet it is not the subject, but the way in which the subject is taught, that is of importance. No one recognises better than the Americans themselves this weakness in their educational system. It is receiving the most earnest consideration from American educators all over the country, and great improvements are every year being effected. In the "Report of the Committee of Fifteen on Elementary Education," to which I have already referred, the questions what subjects should be taught, when they should be taught, and how they should be taught, are discussed, and the conclusions of the eminent educators who formed the committee are set out.

Another consideration which should be borne in mind in estimating the value of the work done in the American schools is, that many educators think that the attempt to secure what is called

thoroughness in the branches taught in the elementary schools may be, and is very often, carried too far, in fact to such an extent as to produce an arrested development (a sort of paralysis in the mechanical and formal stages of growth), and that the mind in that state loses its aptitude for general studies and wider generalisations. Teachers, they say, should be careful, especially with precocious children, not to continue too long in the use of a process which is becoming mechanical, for it is already growing into a second nature, and becoming a part of the conscious apperceptive process by which the mind reacts against the environment, recognises its presence, and explains it to itself. The child that has been over-trained in arithmetic reacts apperceptively against its environment chiefly by noticing its numerical relations—he counts and adds; his other apperceptive reactions being feeble, he neglects qualities and causal relations. Another child who has been drilled in recognising colours, apperceives the shades of colour to the neglect of all else. A third child, excessively trained in form studies by the constant use of geometric solids and much practice in looking for the fundamental geometric forms lying at the base of the multifarious objects that exist in the world, will, as a matter of course, apperceive geometric forms, ignoring the other phases of objects.

Perhaps this may be the explanation of a curious fact I noticed in one school I visited, where the children were being taught a great deal of mental arithmetic of, as it appeared to me, an exceedingly difficult character. Wishing to test, to some extent, the powers of observation of the children, I asked them to tell me about the birds of the neighbourhood. In most schools I had visited, to any such question I should have received much information of a varied character, but in this school I could hardly get any. One child said there were sparrows; so I asked what colour the American sparrows were, and received the most astonishing answers, blue, green, yellow, almost every colour except brown. Yet the children were not stupid children; on the contrary, they were more advanced in the subjects taught, as far as I could judge, than any children I had seen up to that time in America, but I do not think they looked as happy, healthy, alert, or intelligent as many I had seen in other places, whose attainments were not nearly so high.

Moral Teaching.—As far as I could judge there is very little direct moral teaching of a formal, didactic character in the American schools. In the opinion of many of the leading educators, I gather, it is generally a waste of time, and may be positively harmful. Yet the training of the heart is by no means neglected, especially in the first six grades. Most of the teachers regard the training of the characters of the children as the most important of the duties entrusted to them, and never, in any of their work, lose sight of it. Indirectly, especially by the improved spirit of discipline, the teaching of history and English literature, a great deal of excellent moral teaching is given.

I had the pleasure of listening on one occasion to a history lesson given by a very able teacher at Brookline to a class of children about 11 years old, where the children took the keenest interest in the character of the leading personages who lived in the period which they were studying, and frequently discussed their conduct. I was delighted to see how much excellent moral instruction the teacher, with consummate tact, managed to get into this lesson;

yet I hardly once heard her express her own opinion, and she seemed rather to be leading the children to make discoveries for themselves. Never have I seen a class so intensely interested in their work, and I am sure there was not a child in the room who was not really sorry when the lesson was over. I asked this teacher her views as to direct moral teaching. She seemed to think that in unskilful hands it was almost sure to be mischievous, but that when well done, it was very helpful. She herself made a practice of talking to the children from time to time on such subjects as self-respect, self-control, selfishness, obedience, love and sympathy, truth, honesty, good temper, courtesy, the home, the school, patriotism, etc.

These talks, she said, were popular, and if by any chance they were postponed the children were very disappointed. Most of the text-books written for children on ethical subjects were, she thought, unsatisfactory; the only one she strongly recommended was "Ethics for Young People," by Professor Everett (Ginn and Company, Boston). I have since myself read this book, and agree that, with a judicious teacher, it should be very useful.

All American schools begin work by collecting the children together in the assembly hall. A chapter of the Bible is usually read, and a hymn or song is sung by all the children together, after which the head teacher, or someone else invited by him to do so, addresses the children. In this way, no doubt, some direct ethical teaching is given, but as to its value opinion is much divided. No doubt these meetings afford valuable opportunities, but the teachers who are capable of making good use of them are limited.

Before passing away from this subject, it may be well to mention a point to which many American teachers attach considerable importance, the unifying of the home and school life. In many places I found it was customary to hold one or two meetings each term of the parents of the children at the school, and for the teachers to visit at the homes of the parents, special times being set aside to enable them to do this. Teachers of kindergartens, for instance, are, as a rule, only employed during the morning, but are expected to visit the parents during the afternoon.

At New York I was able to be present at a meeting of parents held in a school in a moderately poor neighbourhood. About 200 mothers were present. As soon as each parent arrived she was shown where the teacher of the class in which her children studied was standing, and all were soon eagerly discussing with the teachers and with each other the progress, etc., of the children. After general conversation for about half-an-hour, all the parents sat down at the children's desks, and were then addressed by the late head-mistress of the school, who had just been appointed one of the assistant superintendents of education. On this occasion she began by explaining that, as the new course of study had been found too difficult for some of the children, it had been found necessary to put back several into lower grades. The necessity for this was explained with great care, so that the parents of the children might not feel unduly disappointed. She then spoke of the necessity for mothers watching carefully the company their girls were keeping, of making their home life happy, and of encouraging them to talk frankly at home, so that the parents might judge of the company their daughters were keeping, and whether they were healthy-minded.

She referred also to the clothing of the children, the ventilation of the bedrooms, feeding, the importance of checking the use of slang by girls, and of repressing any tendency to flashy dressing. She spoke of everything in a most practical manner with the greatest tact, and I could see that the parents were delighted. It is not uncommon for over 85 per cent. of the mothers to attend these meetings, although no tea or other entertainment is provided. At a school at Brookline, where the majority of the children came from a poor neighbourhood, similar work of this kind has met with great success. The principal told me that she always encouraged the mothers to come and see the school, and whenever a new child arrived she sent a special invitation to the mother. Meetings of the mothers are frequently held in the school, when a simple tea is provided by the teachers, and about 400 out of 700 parents usually attend. The children together compose the letter of invitation which is to be sent, and afterwards make the copies. On arriving, the mothers are taken to the desks occupied by their children, on each of which are placed specimens of the work done by the child who occupies the desk. The first half-hour is spent in the examination of the work, and conversation with the teachers of the class and with each other. All then adjourn to the assembly hall, where tea is provided, and as soon as this is finished the principal addresses the parents, and discusses with them topics of common interest.

The idea underlying these conferences is that the teachers and parents are in partnership, and must constantly confer together if they are to work with perfect harmony for the end they both have in view. To realise the full effect of these meetings, one must remember that in America the schools are attended by children of very different social standing. The principal told me that it was delightful to see how the parents talked together and discussed their respective children on terms of perfect equality. Sometimes the richest people who made a point of coming in their best dresses, as they would to the smartest society gathering, insisted on helping to wash up.

Physical Culture.—In most of the schools I visited, physical drill, generally based on the Swedish system, is practised, and in some schools I found excellent gymnasiums, but I venture to think that, in a great many of the elementary schools particularly, hardly sufficient attention has yet been paid to this subject. In the classrooms great care is taken that the children do not assume hurtful attitudes, and that the conditions under which they work are healthy. In some cities, New York for instance, a doctor attends each elementary school regularly every week, and a nurse visits daily to carry out his directions. This medical attendance has been found invaluable in checking the spread of infectious complaints, and improving the general health of the children. In America, as in this country, much trouble has been caused by juvenile smoking, and I was told that in over 40 States it is now illegal to sell cigarettes to children under the age of 16. I have not yet been able to verify this statement, but I have been in several States where the feeling against juvenile smoking is so strong that all sale of cigarettes, even to adults, is prohibited.

Manual Training.—As the result of my observations and inquiries in America, I am deeply impressed with the importance of a well-considered system of manual instruction, both in the elementary

and secondary schools. Some of the other Commissioners devoted considerable time and attention to this subject and will, I trust, report fully upon it. There is undoubtedly growing up in America a very strong feeling in favour of its extension. In almost every town we visited, splendidly equipped manual instruction high schools have been erected, or are contemplated. In the elementary schools it is not so universal as I anticipated, and as far as I could see, it is not much in advance of that given in many of our own elementary schools. Whenever I found it in operation, I used to ask the principals and other teachers their opinion as to its value, and invariably found they were enthusiastically in favour of it where the training, as far as I was able to judge, was good, but where, as not unfrequently was the case, the training appeared to me to be very indifferent, I found the teachers regarded it as a waste of time.

Co-education.—In the eastern and southern States co-education—that is to say, the education of boys and girls together—is not by any means so universal as it is in the western States. As to its desirability, the opinions of American educators differ, but I noticed that whenever I met strong opponents of the system, they were people who had not themselves been educated under it. Those who had were almost always strong advocates of the system. As far as I could ascertain, the objections which are usually urged against it are groundless. In the elementary schools, as far as I could see, it is attended with excellent results, but it is not so entirely satisfactory in the high schools and universities. One master, who has had experience of both systems, objected to it mainly on the ground that, while boys between the ages of 14 and 18 require pressing, girls of the same age are inclined to work too hard without pressure, so that where both classes are mixed one or other of them is sure to suffer. My chief objection to it, however, is that I cannot believe that precisely the same education can be an equally good preparation for classes whose work in after life will probably be so different. To give a girl education designed to fit a boy for the work he will have to do in after life must, I have always thought, tend to give her an undue admiration for a man's nature and ideals, and lead her to look somewhat depreciatingly on those of her own sex. I cannot say that anything I heard or saw in America changed my opinions on these points. I could not, however, help noticing that the girls in America are, as a rule, more self-reliant and better able to take care of themselves, and are treated with greater respect by men in America than they are in this country, and I am inclined to think that this is due to some extent to co-education.

Organisation.—The organisation of the American city school system is described in the "Report of the Committee of Fifteen on Elementary Education." In the main I agree with the recommendations made in this report, but I recognise that for many reasons it would be impossible to adopt them in their entirety in this country. The statement of President Butler, which appears on page 202, seems to me very suggestive of the lines upon which a considerable improvement might be effected in the organisation of our city school systems. I regret space does not permit of my stating the nature of these recommendations, as any attempt to do so briefly would be misleading. I must, therefore, leave those who are interested in the subject to read the report.

Secondary Schools, Technical Schools, and Universities.

I am sorry I have neither time nor space to report my impressions with regard to these most important branches of educational work in America. There can, however, I think, be no doubt that in the provision for secondary, technical, and university education, America is far ahead of this country, and that there is a growing appreciation of its value on the part of the manufacturers and business men.

Museums.

Of museums there are not a great number in the United States, but the few which have been established are, I believe, in some respects the finest in the world. The Natural History Museum at New York, of which, as yet, only a small part has been completed, is as large as any I have seen, and splendidly organised. I was much impressed with the care taken in this, and other American museums, to make the collections intelligible and interesting to "the man in the street." There is no overcrowding, every specimen is shown to the best advantage, and has a large, clearly printed explanatory label or pamphlet attached to it. The local collections always occupy prominent positions, and everything possible is done to interest the public in the scientific aspect of their environment. I do not think it would be possible for anyone, however limited his scientific knowledge, to visit one of these museums, particularly the Natural History Museum at New York, or the Smithsonian at Washington, without feeling greatly interested, and without learning much that will be stimulating and suggestive. On Sundays, I was told, the museums are crowded mainly by parents accompanied by their children. It is, I believe, difficult to overestimate the educational value of a good museum so arranged.

Libraries.

The public library system is well developed in America, and in almost every town I visited I found an excellent public library. The Congressional Library at Washington and the Public Library at Boston are in magnificent buildings, and their organisation is far in advance of anything I have yet seen. A full descriptive report of the Boston Library in particular would, I believe, be found very useful to those engaged in carrying on similar work in this country.

I paid particular attention to the children's department, and succeeded in obtaining from the lady in charge of that in the Boston Library an account of the work there, of which the following is a copy:—

A separate department for children has existed in the Boston Public Library since May, 1895. It occupies two rooms, one for recreative reading and the other for study, both furnished with low tables, chairs, and bookcases.

The reading room has for decoration Howard Pyle's illustrations of the life of Washington, prints of historical and architectural subjects, two casts of Luca della Robbia's "Singing Gallery," and a collection of autographs of persons connected with American history. Fiction and the most used class of books are shelved here, the fiction being arranged alphabetically according to the authors; the other books are divided into ten classes, shelved in the same way, with the exception of biography, the arrangement of which follows the usual library method. Books circulate directly from this room, the children selecting them from the open book-shelves at will, or consulting the card catalogue which contains the names of all the books in the department.

The amount of fiction in the room comprises less than half the number of books, but it averages 79 per cent. of the entire circulation. In 1902 the issue of books directly from the children's room at the Central Library was about

64,000 volumes, somewhat less than the figures for the preceding year. The average daily issue in winter is about 220, the largest about 600. These figures do not include children's requests made and supplied through the branch department: more than 12,000 were sent through the children's room alone by the daily delivery wagons; in last year, exclusive of those filled at the various branches from the supplies in them. Because there are various sources of supply for children's books, it is impossible to estimate correctly the number of books drawn by them in a year from the different parts of the Library.

Children over the age of 10 years can be card holders, and may draw two books at a time, both of which may be fiction. In registration a slip is furnished for signature by the parent, and this signature, with its request, is verified by a library messenger, who calls at the parent's house. Books may be kept for two weeks, and for longer detention a fine of 2 cents a day is charged.

The children's room is opened from 9 a.m. to 9 p.m. on week-days, and from 2 p.m. until 9 p.m. on Sundays. Four attendants, who are relieved at 6 p.m. on Sundays by a separate staff, are assigned to the two rooms. All routine clerical work and simple mending is done in the department. Books are catalogued by the regular cataloguing staff of the Library.

In the reference room lessons are studied, compositions written, and other preparations for school are done. One feature of the room which is constantly proving its value is the collection of text-books used in the Boston public schools. This is especially helpful to the many who wish to continue study after leaving school, for students in the night schools, and for teachers from other places. In addition to this, there are ordinary reference books, with a special selection for kindergarten teachers.

Effort is made, as far as possible, to influence children in the choice of good reading, but personal freedom is not interfered with, and the result is that the child usually asks of his own accord for help in the selection of books. A bulletin board for the exhibition of picture bulletins is in use, and serves to call attention to current events, or to illustrate some subject which is timely or interesting. Pictures used in this way are cut from periodicals and mounted in the room, or they may be Perry pictures, and the like. Mounted photographs and half-tones loaned by the Fine Arts Department are also exhibited. The picture bulletins are changed as often as once a month, and many of them do not remain posted as long as that. They are sometimes accompanied by lists of books relating to the subject illustrated, and frequently the books themselves are placed on adjoining shelves.

Organised work with schools is carried on in the children's room as well as through the branch departments. The special accommodation for students (mentioned above) is appreciated, and opportunity for help in looking up school topics is always open. Talks to the upper grades of the elementary schools are given in the reference room whenever a teacher desires. This is done as a school exercise, classes meeting at the Library for this purpose. Several talks on the use of the Library, the catalogue and reference books, are prepared and given as occasion or the attainments of the class demand. Besides the direct information thus received, these talks are valuable in giving the children an acquaintance with the Library, which makes it easier for them to come alone and to feel free in asking information or assistance.

Teachers are invited to come to the Library with classes, and themselves to give instruction or make use of books reserved for them as they may request.

Books are sent to the schools by the branch departments, which has a special collection for deposit. Application is made to this department, either at the Central Library or the branches, by teachers who may furnish the titles of the books which they wish supplied; or, if they prefer to send a subject merely, the books are selected by the librarians. Complete freedom is allowed teachers to make their own choice of books, no record of circulation is required, and the books may be kept weeks or months as desired.

The feature in connection with the work of the children's department, which seemed to me specially commendable, is that they are always in charge of a sufficient number of educated women to enable the children to get good advice and assistance in the selection of books suitable for them, and that in various ways the co-operation of the teachers in the schools is secured, so that the work of the library is kept in touch with that of the school.

Some special mention should certainly be made of the Hampton Institute for Coloured People, Virginia. The interest of the work

done here is by no means confined to the effect it is having on the solution of the coloured problem. The principle of "learning by doing" is there applied throughout the whole of the work of the institute, from the kindergarten upward, with a completeness to be found in very few if any other places. The results, so far, have been very satisfactory, and have met with the approval of the public in the South as well as in the North. We were received by Dr. Frissell and other members of the staff with the greatest kindness and hospitality, and spent a busy but delightful day in going over the buildings and inspecting the work done there.

As I was one of a party of five who continued the investigations of the Commission in the West and South, and as this was by no means the least satisfactory and instructive part of the tour, I trust I may be allowed to make some special reference to it.

Before leaving Chicago I was able to visit the works of the International Harvester Company, the largest concern engaged in making reapers, binders, etc., in the world. I was greatly impressed by the completeness of the works and the rapidity with which the different operations were conducted. The comfort of the employés in these works is by no means neglected, excellent dressing-rooms, lavatories, and dining-rooms being provided for them. Strikes, I was assured, are almost unknown at these works, and excellent relations exist between the employers and the men. If I recollect rightly, it is this firm which, I was informed, take on five college men in each year with a view to their occupying positions of responsibility in a short time. During the vacations, numbers of college students are engaged at the works, and are paid for their services, the company being glad to get them.

Our first stop after Chicago was Rock Island and Moline, two towns of 20,000 inhabitants each, which are so near each other that they cannot well be distinguished. At Moline we visited the John Deere Plow Works, which, though not so large, are in every way as complete and remarkable for the rapidity with which the work is executed as the Harvester Works at Chicago. In both these works the managers attributed their success in no small measure to the fact that all their employés fully recognise they will benefit, and not lose, by improvements in machinery. The men, consequently, are eager to suggest improvements, and owing to the excellent education many of them have received are not infrequently able to do so. The provision for elementary and high school education in these towns, as in all those we visited through this part of the West, was upon a most liberal scale. More than half the public expenditure is upon education. The school buildings are very handsome and well planned, and the educational work, as far as I could judge of it in the short time we were there, was distinctly good.

At Kansas City the recent school buildings are very good, but there are several old and not very satisfactory buildings in use. The level of attainment in the schools was, I thought, exceptionally high, but I am not satisfied that this apparently satisfactory result is not being obtained at rather a high cost in the elementary schools, as in some of the schools the younger children, in particular, appeared to me overstrained. I missed the bright, happy, alive look I had hitherto found in the best American schools. The children, also, did not appear to me as healthy as one might have reasonably expected in a town so well situated as Kansas.

From Kansas we travelled to Topeka, where the kind welcome of the superintendent and the other school officials even exceeded that which had been extended to us in other places. The school work at Topeka was, I thought, admirable throughout. An excellent spirit seemed to exist in every school we visited, and it would, I think, be difficult to find anywhere a more able and enthusiastic staff of teachers, or a brighter, healthier, more intelligent-looking set of children than those we saw in these schools. These results, however, have not been obtained without a considerable sacrifice on the part of the parents, as here again, we were assured, more than half the public expenditure is on education.

Our next visit was to the State University at Lawrence, which is splendidly situated at the top of a hill overlooking the town. The buildings are handsome and admirably adapted for the purposes for which they are required. The university is absolutely free, and a large proportion of the students maintain themselves out of their own earnings for work they do at the university or in the town during their spare time and vacations. The university is well equipped in every department, and has a large staff of professors of high standing. Co-education is universal in the West through all stages, even to the university. The museum, for the accommodation of which a fine building has been erected, is exceptionally good, and will, probably, before long take a high position among such institutions in America. In the afternoon we visited the Haskell Institute for Indians, where a large number of Indian girls and youths are being admirably educated and trained in different handicrafts, agricultural work, and domestic arts.

From Lawrence we travelled to Colorado Springs, passing through immense tracts of fertile territory which appeared to be mainly devoted to wheat growing and cattle grazing. On all hands we heard most glowing accounts of the fertility of the soil, and even the farmers, a proverbially difficult race to please, seemed entirely satisfied. We arrived at Colorado Springs on a Sunday, and the schools were not, therefore, in session. We visited some of the buildings which, in my judgment, are the best I saw in America. Of course, Colorado Springs is, comparatively speaking, a small place, and has many advantages such as, comparatively speaking, cheap land, and a fairly prosperous community, not possessed in an equal degree by some of the larger towns. I am sorry I have not the ability to describe the beautiful country we saw while at Colorado Springs, but, perhaps, it will be sufficient if I say that the day we spent there was to me one of the most enjoyable of the tour.

At Denver, again, we were received with the greatest kindness and hospitality. I was most favourably impressed with the work in the schools, particularly that of the Manual Training High School. From Denver we passed to Guthrie, our first stop in the Oklahoma Territory. It is now 13 years since this huge territory, consisting of 24,000,000 acres, was thrown open for settlement, yet it has already more than half-a-million inhabitants, and boasts of several towns, two of which we visited. Of the fertility of the soil and excellence of the climate it is apparently difficult to speak in too high terms. An amazing variety of crops has already been produced, and as soon as a sufficient supply of labour has been obtained it bids fair to become one of the greatest cotton-growing States in the world. When one recollects how the already congested populations of the East are being flooded every year with

immigrants one cannot help thinking it would be greatly for the benefit of all parties if some steps could be taken to divert the stream of immigration into this as yet scarcely populated region. Astonishing as is the rapid growth of the towns, even more significant of the enterprise and excellent character of the inhabitants is the development of their educational institutions. A complete system of free education, from the common school to the university, with a training school for teachers, has been established, and already the people residing in the State can make the proud boast of the highest percentage of school attendance of any pioneer farming community. We visited several schools at Guthrie and Oklahoma City, and found it difficult to believe that so much had been done in so short a time.

From Oklahoma City we went to Houston, from which we made a flying visit to Galveston. In the South, as we anticipated, the schools left much to be desired, but one should never forget the exceptional difficulties with which, since the war, they have had to contend. With the wave of prosperity which is spreading over the South there is already an educational awakening, and as in other parts of America, one of the first uses to which the public will put their money will be the improvement of their schools and other educational institutions. My feeling as I left this part of the country was, that in the not far distant future there would be a development there which would compare favourably with that which has already taken place in the Eastern States of the North.

The recent growth of the Tulane University at New Orleans is an indication of the growing appreciation of the value of education in the South. The new buildings, which are already erected, present an imposing appearance, and plenty of land has been secured for future extensions which are contemplated.

At Nashville, a comparatively speaking small town, a very large number of educational institutions have been established, including several large private schools. We first visited the Vanderbilt University, which is splendidly situated and has a large number of fine buildings. Although provision is made for engineering and scientific courses, the work of the university is mainly academic. Considerable difficulty has been experienced during past years in consequence of the insufficient secondary education of many of the students who came to the university. Frequent unsuccessful attempts have been made to induce the university authorities to modify the courses so as to enable a larger number of students to come to the university. The refusal to lower the requirements has been fully justified, as the work of the secondary schools has been greatly improved, and the university has now as many students as can be accommodated there with the present staff and buildings.

We also visited the Fisk University for coloured students, and were greatly interested with the work done there.

The Peabody Normal College, to which we next went, is a fine institution for the training of teachers. We inspected a number of elementary schools, but there is nothing in the work being done there to call for any special attention.

At Knoxville we were shown over the State University of Tennessee, and were delighted with the excellent work it is doing. We had seen many universities with more elaborate buildings, but in none did it appear to me there were more signs of vigorous life. As a rule, in the South, there is not the same enthusiasm for

education as in the North, but we saw no sign of any lack of it at Knoxville University. No less than 60 per cent. of the students, we were told, were maintaining themselves while at the university from their own earnings. In connection with this university there are two experimental farms where most valuable educational and research work is being done. The excellent results which are being obtained from the employment of scientific methods on these farms have already impressed the farming community, and every year an increasing number of those who intend to take up agriculture are coming to the university.

I regret it is necessary for me to deal in such a cursory manner with the work of this university and other educational institutions in the South, as although they are not so advanced as some of those we saw in the North, they are as interesting when the difficulties with which they have had to contend are considered.

HERBERT R. RATHBONE.

Mosely Educational Commission.

Report of Professor H. R. REICHEL.

Manual Training.

Manual training in all its branches forms one of the most remarkable features of contemporary education in America, and is exciting special interest in Great Britain. Having myself given particular attention to the subject for several years, I devoted much of my time to it, and especially to the manual training high schools. This institution is a characteristic American development. It is essentially a city school, and has two objects—educational and vocational—sometimes one and sometimes the other of these being the more emphasised. Educationally, its function is to train a side of the mind which would otherwise be left undeveloped; vocationally, to fit boys to enter into the industrial and commercial life of the great cities after prolonging their school attendance to the age of 18.

Brooklyn Manual Training High School.—The principal began life as a telegraphist, saved money and went to college, and has worked 25 years in high schools. He is not himself a manual training expert, but has visited all the existing manual schools, and his opinion should be of special value, knowing, as he does, the practical as well as the academic side and viewing the academic from the practical standpoint. He expressed a strong opinion of its educational value. The pupils have to pass the city superintendent's examination in the ordinary book subjects, and they take as high positions in it as pupils from the academic high schools who have no manual training. Besides pointing to its value in vitalising abstract subjects like mathematics and creating an intelligent interest in outside life, he dwelt specially on the power it seemed to develop of following out in the mind the whole line a problem would take before putting pen to paper. After 16 or 17 its function was purely vocational. There was also some danger, unless it were restricted in time and correlated with the book subjects, that mechanical interest might swallow up every other.

Of the boys, half go into technical work, three-quarters entering college; of the girls, three-quarters become teachers. The course, as in all high schools, covers four years—from 14 to 18. The school time-table embraces 30 hours a week, of which six are given to manual work.

	First Year.	Second Year.	Third Year.	Fourth Year.
Boys....	Joinery ..	Forging ..	Printing ..	Machine Fitting
Girls....	Sewing ..	Cookery ..	Millinery ..	Domestic Science

These subjects are combined with drawing, both freehand and mechanical, and with certain variations (*e.g.*, the substitution of foundry work for printing) may be taken as typical of the manual training high school. The manual work, apart from drawing, thus takes up one-fifth of the school time. One foreign language is taught—Latin or German or French—but no Greek, and, by means of a considerable latitude of option, courses are provided suitable for the university on either the arts or the technical side, for the normal training college, and for business life.

Visiting the classes, I was struck by the high artistic and educational value of the metalwork in the second year (forging). The room was full of life, the work astonishingly good, and from the beginning based largely on original design and free from the deadening effect of mere exercises. The woodwork, on the contrary, was tame and uninspiring. Both the principal and the metal instructor—a man of marked originality and artistic gift, who had begun as an artisan—were of opinion that the manual instructor should, as a rule, be a teacher who has subsequently received technical training rather than an artisan who has been trained to teach.

Since the mechanical operations are quickly learnt and make no severe demand on the intelligence, the value of the printing seemed to lie mainly in its correlation with the book studies. It is used to encourage original composition and *esprit de corps* by the publication of a school magazine entirely written, illustrated, set up and printed off by the boys themselves.

Pratt Institute High School.—This grew out of the Pratt Institute, which was founded as an adult technical school to aid wage earners, and consisted of several independent departments, each with its own principal, office, and staff. The first department founded was that of art, drawing being regarded as the basis of all skilled manual work. There were then added departments of technical science, of science and technology, of kindergartens, and of libraries. This adult work was of two kinds—(1) a technical evening course, (2) a day course of more educational character. The earliest demand came from teachers who wanted to carry on practical work in their schools, employers having no faith in it. The teachers, however, came ill-prepared, and the high school was established as preparatory to the institute. Now, however, it is worked on general lines as a manual training high school, but still reflects the central principle of the institute, as thus expressed by the trustees: "We believe that there should be no division between the work of the artist and that of the artisan, but that the best art work has always been accomplished where these two were one." On the whole, the course is much on the lines of that at Brooklyn, Latin being optional and manual training and drawing together taking ten hours a week. Special features are that German is compulsory, that there is no French, and that for the first two years no less than five hours a week are given to physical training. In the manual work both sexes do woodwork together the first year; the boys then go on to wood turning, forging, and machine fitting, and the girls to sewing, designing, and cookery.

The System in the New York Elementary Schools.—Though the elementary and secondary schools of New York are under the same educational authority, the manual work belongs to separate departments. The elementary manual work is under one supervisor, Dr. Haney, with 26 deputy supervisors—all specialists—one to each school district. These do not teach in the schools themselves, but instruct the teachers and follow their work; in each district there is a class for the training of teachers constantly going on, and the business of the deputy supervisor is to conduct this class and generally to promote interest in the subject in his district. There are two kinds of manual work: that for the lower grades—cardboard, clay modelling, etc., taught by women; that for the

upper grades—woodwork (two and a half hours)—taught by men. The specialist supervisors of the woodwork must have spent four years at a high school and three or four at a college or normal college. These trained specialist supervisors form the mainspring of the system. They are treated as equal in rank and salary to the ordinary masters, and some of them become principals of schools. The bench work consists in the making of a series of prescribed objects, culminating in an original object, of which the main lines are suggested by the teacher, but the detailed design worked out by the pupil. Practice exercises apart from objects have been almost entirely abandoned.

With regard to the work done in the elementary school and the high school respectively, Dr. Haney expressed this opinion: "If the manual training is done effectually on educational principles in the elementary school, it is only needed in the high school as part of a specialised training."

Manual Training in Washington.—Washington is one of the few cities in which manual training is organised on a correlated system right up from the kindergarten through the lower and higher elementary grades and the high school. The co-ordination is so perfect that, as the principal of the Franklyn Public School expressed it, moving up from the elementary school to the high school was like moving up from one grade to another in the elementary school. Franklyn Public School may be taken as typical of the work done throughout the Columbia district. To woodwork one hour and a half a week is given. The work begins with class demonstrations, but the teaching is individual, and the object educational development rather than technical skill. The method begins with exercises and proceeds to completed objects, the pupils being encouraged to finish them off with decorative carving. The work is co-ordinated with the school mathematics, and the experience of the teachers shows that the connection helps the pupils to form better conceptions of abstract mathematical truths.

Washington has adopted the method of specialised high schools—(1) academical, (2) commercial, (3) manual training—instead of a general high school with separate departments.

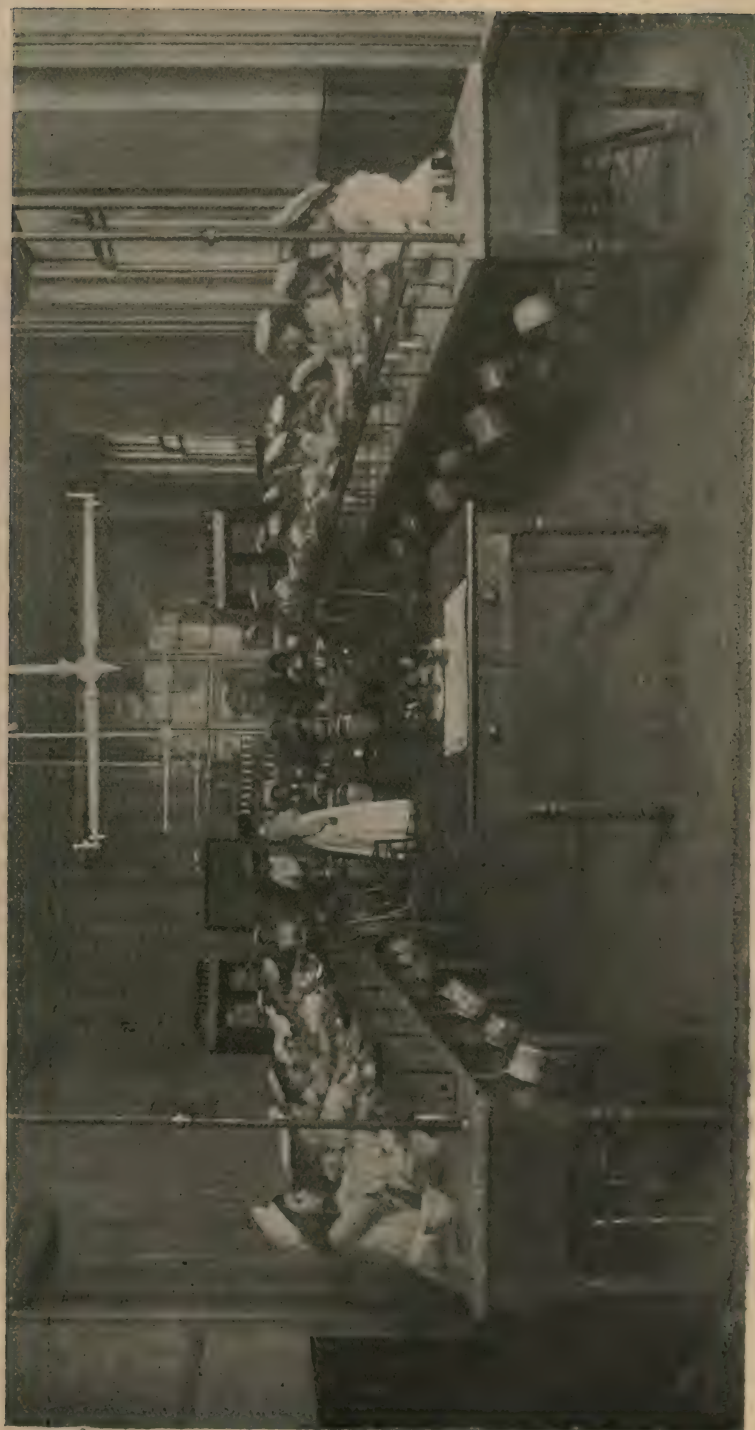
McKinley Manual Training High School.—Here there are four courses:—

- (i.) Two years' business course.
- (ii.) Four years' non-collegiate course.
- (iii.) Four years' normal course (for pupils intending to enter the training college).
- (iv.) Four years' course preparatory for college.

Latin is not taught at all, and a modern language, German or French, only in courses iii. and iv. The school week is 25 hours, as against 30 in New York; of these, four are given to manual training and four to drawing in every course, an additional four hours being given to manual training in course i.

	First Year.	Second Year.	Third Year.	Fourth Year.
Boys: Joinery ..	Forging ..	Machine Fitting ..	Machine Fitting	
Wood Turning	Foundry Work			
Pattern Making				
Girls: Cooking ..	Cooking ..	Domestic Science ..	Domestic Science	
Pain Sewing	Laundry ..	Domestic Art ..	Domestic Art	
	Dressmaking			

In the last year of the normal course Sloyd woodwork is taken.



A JUNIOR GIRLS' PUBLIC SCHOOL COOKERY CLASS.



A comparison with the corresponding syllabus at New York shows that, though occupying fewer hours, it is carried to a further point and clearly presupposes a higher stage of attainment on entrance. It is significant that *no boys attend the normal course, and few girls attend any other*. The subsequent careers of boys who graduated in the three years 1897 to 1900 is shown as follows:—

University technical courses and technical institutes	..	23
Engineering and machine shops	.. .. .	16
Commerce and professions	.. .. .	14
		—
		53

Only 42 per cent. go on to universities, and these all for technical courses, while from Brooklyn the percentage is about 70, some of whom take literary work. The principal thought that the educational trend was towards specialised high schools; he insisted strongly at the same time that the object was general training, not trade teaching. The work done in the workshops seemed much more technical than at Brooklyn, being based on exercises and class teaching, and starting with lathework. The head of the manual training department—a graduate of a technical institute—maintained that the object was more directly practical, adding: “These boys are better mechanics than the Brooklyn boys; the Brooklyn system kills blacksmithing.” A doubt expressed as to the educational value of the method elicited the reply: “That is what those educators say, but if you want to make a good mechanic this is the way to do it.”

The atmosphere was more purely industrial than at Brooklyn or Pratt, the artistic element being conspicuously absent. The culture element is provided by English (including history) five hours a week, which is admirably taught, the head of the department being a specialist trained in the Post-graduate Seminar of the Johns Hopkins University. German is taught on the old-fashioned dead language method.

Hampton Institute for Coloured Students.—No educational institution that I visited in the States impressed me so strongly as Hampton; but it has been so admirably described by Mr. Sadler (*Special Reports*, vol. xi. pp. 546-555) that a detailed account would be superfluous. It is remarkable as the school that has—(a) solved the problem of industrial education for a rural population; (b) initiated the movement that forms the most hopeful element in the formidable race question of the Southern States. It is rather an industrial community with a strong educational side than a regular school, and the essential principle of the training is the union of literary and religious culture with industrial work.

Manual Training at Boston.—The system adopted in those of the Boston elementary schools in which manual training is given may be illustrated by the work done at the Dwight School. Here card-board work is carried out in Grades 4, 5, 6 (age 10 to 12), and Sloyd woodwork in the highest grades, 7, 8, 9 (age 12 to 15), all the work being under the Sloyd teacher, a graduate of the Sloyd Training School. The class contained 30—too large a number for really effective individual teaching.

The Brookline High School is an academical high school, but with a manual training department. In the latter there is no Latin or Greek. The manual training consists of three hours a week drawing and three hours a week benchwork. In all other subjects

pupils of all departments take the same classes. The exclusion of Latin is not deliberate, but accidental. The school day closes at 1.30, and there is no compulsory afternoon work as in New York; hence time-table difficulties make it impossible to allow the manual training pupil this option. The manual training for the boys consists in the first year of tool woodwork, in the second of wood turning, in the third of forging, and in the fourth of machine fitting. For the girls corresponding feminine occupations are arranged.

The instructor explained that the system originally adopted was one of exercises, but it had been recently greatly influenced by Swedish educational ideas, and the tendency was steadily in the direction of substituting "models" for exercises. He believed himself that this was educationally better.

In the wood turning of the second year the attempt is made to counteract the purely mechanical tendency of this work by encouraging original design. The feature of the manual work on the girls' side was the way in which the art work was brought to bear upon the needlework and millinery. The method of teaching colour in the art department by coloured diagrams, starting from neutral tints, and of developing original design, seems to me worthy of study by experts. This art work is compulsory the first year and optional afterwards, when it is largely dropped by pupils preparing for the university. There is no copying from other drawings—every drawing is done from the natural object; this I find to be almost universal, both in the United States and Canada. Principal Sandford hopes ultimately to bring original design into the same close relation with manual training on the boys' side also. In a mechanical drawing class which I visited, of 24 who were working five had in view the Institute of Technology, six the Science School of Harvard University; in other words, 45 per cent. in their second year already contemplated going on to college.

In the Rindge Manual Training High School, for boys only (total number, 349), the principal stated that from 20 to 25 graduated every year. The percentage of boys who had completed the elementary school course entering the school had risen from 33 per cent. in 1898 to 57 per cent. in 1903. The quality also had steadily improved. There used to be an idea that manual training was for the stupid boys; this was now completely dead, and the most vigorous and enterprising boys chose the Manual Training School, with the result that in the English High School the girls outnumbered the boys by three to one.

Of the boys who graduated nearly half went on to the university technical school; the rest either entered engineering offices as draughtsmen or became assistant superintendents in offices involving mechanical knowledge. The school was in no sense a trade school; the boys did not become mechanics, but supervisors of mechanics. They got posts at commencing salaries of 7dols. to 12dols. a week, and rose in these posts to about 1,200dols. a year. The demand was greater than the school could supply. Large manufacturing firms had asked for "all the boys you can send qualified for our work," at 9dols. a week. Other graduates held higher posts of various kinds running up to 3,000dols. Repeated cases had occurred of boys who had failed in the ordinary high school achieving marked success on being transferred to the Manual Training School. The principal believed that in the university engineering department his old boys beat those of the ordinary high

school. (This view, however, was not borne out by the evidence obtained in that department itself. One of the professors of engineering considered that the manual training high schools did excellent work in turning out foremen for industrial work, but were not so good as preparatory for the technical course at the university. The boys did better at first, but fell back later on in the higher abstract work essential to make a first-class engineer.) He considered that manual training should be up to a certain point compulsory, and after that optional, and preferred a single high school with a manual training department to independent specialised schools.

Dewey Experimental School.—This school forms the practice school of the training department of the University of Chicago. Professor Dewey began as a philosopher, and took up the work of education with the view of putting in practice certain educational ideas to which his studies in psychology had led him. The school method throughout is based largely on manual work on the Fröbelian principle. This, however, is not all; it embodies the idea that the individual passes through the same stages of growth as the race, and that the child therefore is in a sense analogous to the savage. His knowledge of life should therefore begin with the simple forms of life found amongst savages, their pursuits, industries, and so on. Thus, the children are taken through courses of weaving, rude woodwork, etc., not so much to give them manual expertness as to enable them to realise the gradual development of human culture. This idea, attractively explained in Professor Dewey's "School and Society," may sound far-fetched and unworkable, but a visit to the classes will show that in practice it is comparatively simple. The work in one of the higher classes (age 11 to 12) struck me as an ideal form for the Nature lesson. The subject was the growth of sand dunes, which had been suggested by a visit to the shores of Lake Michigan some weeks before. The children were encouraged to ask questions about what they saw and to mark the point on a small tree up to which it had been already buried in the sand. On the return, the questions asked were discussed in class; e.g. :—

1. Why do some places when trodden on make a different sound from others?
2. How did the sand dunes get there?
3. Did the water make the mounds?

On a subsequent visit to the shore the growth of the mounds and the rise of the sand up the tree were observed and measured. Then it was pointed out that the rise could not possibly be due to the action of water, and the angle at which the sand rested was taken by a simple clinometer made by the children, who found they could not pile it up at a larger angle than 32deg. On the return to school they drew in coloured chalks their recollection of the scene, and, after describing and discussing their experiences, concluded that the most probable explanation was the action of the wind. This hypothesis was then tested by experiment, and it was found that with a bellows, sand, and a few obstacles the same formations could be produced in the schoolroom. These visits to the shore were used also for making collections of stones and plants, which were dealt with in class. Some of the stones were found to be arrow-heads, and the children, who had already learnt something about Indian life, formed the conclusion that Indians had left them there, and

that between the two visits they had been uncovered by the action of the wind. Here we have the true Nature-study—no text-book, but the questioning of Nature herself by the children themselves.

In the German class German was being taught in the direct method from action, and taught well. This was, however, the only school I visited in the States in which the direct method of modern language teaching seemed to be used.

Professor Dewey is very modest about his work, and claims for it only that it is an interesting and possibly a valuable experiment. He thought that the kind of manual training which gave the best educational results in the school was the basket and textile work, but this might be due to the excellence of the teacher. He laid great stress on the necessity of constantly experimenting and striking out new lines of work. A gifted teacher forms a method for himself—others then take it up, follow the details mechanically, and all the life goes out of it. Comparing the position of the children when they go to the high school with those from the ordinary elementary schools, he thinks that their knowledge is, perhaps, less extensive and accurate, but that they work more intelligently, and certainly with more interest. In short, he considered them inferior in technical skill, but intellectually superior, and believed they had a distinct advantage when the higher work preparatory to the university was reached.

Indianapolis Manual Training High School.—This school was built and organised as the latest and most complete type of secondary school, combining the good points of the academic and the manual training high schools; and the claim is apparently admitted by many competent authorities in different parts of the States. Strictly speaking, it is rather a high school with a strong manual training department, than a manual training high school, pupils having the option of following a purely academic course, but the manual training department bulks much larger than (*e.g.*) at Brookline. The pupils have increased from 526 to 1,200, the staff from 22 to 38. The boys slightly exceed the girls in number. Greek, Latin, French, and German are all taught, but Greek and French only for two of the four years. Manual training pupils may take Latin, and 25 per cent. of them actually do; another 25 per cent. take German. Of the graduates about half go on to college, and half enter industrial or commercial employment. Of the former, four-fifths pursue technical and one-fifth academical courses. Several who have taken manual training throughout the four years follow literary degree studies.

The Atlas Engine Works (Indianapolis) gives the preference in selecting apprentices to graduates of the school, and eight or nine other firms apply for them. As at the Rindge School, the demand much exceeds the supply.

The workshops seemed of the general high school type, but unusually large and splendidly equipped. The work, however, struck me as more purely technological than in some other schools I had seen. With the exception of one artisan who took the forging, all the instructors were graduates of technical institutes. The lathes used in the wood-turning room were all made by fourth-year pupils in the machine shop. On the girls' side the practical subjects were sewing, cookery, hygiene, and nursing. As in other high schools, there were several alternative courses. Manual training

occupies one-half of the whole school time, but, as it involves no home preparation, counts only as one-fourth.

The school superintendent of Indianapolis, Mr. Kendall, is inclined to think that the expenditure on manual training high schools is disproportionately great, and that the engineering course of the fourth year, which swallows up the largest part, should be either dropped or considerably curtailed. The same view was subsequently expressed to me by Principal L. H. Jones, of the Ypsilanti Normal College. He had himself had a large share in the original establishment of this school, and disapproved of the recent development. As he had planned it, engineering shopwork entered in "only just enough to enable a lad to interpret justly industrial life." The change was due to outside pressure. When school superintendent at Cleveland, it was all he could do to keep down the proportion of time given to manual work to one-third; it had since risen to one-half. Some technical institutes take the same view, regarding the inordinate growth of engineering work in schools as an encroachment on their own domain. There seems no doubt that this is the section of manual training in which the risk of boys becoming completely absorbed in mechanical detail, to the exclusion of all interest in abstract studies, is greatest.

Indianapolis Public School.—Here the head mistress dwelt on the wholesome effect of manual training on ordinary schoolwork as raising the level of accuracy in all subjects, but very markedly in arithmetic, and as fostering a healthy social attitude towards labour. The manual instructor is a young graduate of Columbia Training College, full of ideas and educational enthusiasm. The method is that of making whole objects, but on a somewhat special plan. The "project," as it is called, is selected thus: The class having been invited to suggest objects, a debate is held on their comparative merits, and finally one is chosen by formal vote. A general scheme for constructing it is then elaborated by question and answer; the details of this individuals are allowed to vary within limits. The advantage of this method is that the boys are required to think out and thoroughly understand the problem before starting to work upon it. On the other hand, it possesses the serious defect of all systems of class teaching in manual work, that the class has to be kept together, and the individual cannot therefore be allowed to work at his own natural pace.

Cleveland University School.—The interesting feature of this school is that it is one of the first, if not the first, of the private schools preparing the sons of the well-to-do for the old universities and corresponding to the English public schools, which has organised manual training as an essential part of the school curriculum. The idea developed out of a small class in physics organised by a previous master of which manual work formed a special feature. The parents were so pleased at the effect on their boys that they clubbed together in 1890 to build a complete school on the manual training principle. Originally a day school, it has with the growth of its reputation developed a boarding side, there being 190 day boys and 40 boarders. Like most private schools, its course covers the upper grades of the elementary as well as the four years of the high school (age 9 to 18). The present principal, Mr. Pettee, whose own training had been purely classical, came to the headship from one of the old classical schools, Andover, being convinced that the educational principle the school embodied was the right one.

Physical training and manual training are compulsory on all. Physical training is on the Yale University system, and under the direction of a medical expert. It embraces partly gymnastics, partly games and athletics; the aim, however, is not athletic distinction, but healthy physical development. The method is largely remedial; boys have come with serious defects, and left school sound and strong.

In the lower forms (9 to 14) the manual training course consists of clay modelling, wood carving, Sloyd carpentry. In the upper forms (14 to 18), for the first year there is advanced carpentry; for the second and third years, mechanical drawing and machine fitting; and for the fourth year, forging. The forging has been placed last out of the usual high school order, because it involves the heaviest physical work. The apparatus for machine fitting is restricted owing to the great expense it entails, and much of the apparatus has been constructed by the boys themselves. From what has been already said, this will appear rather an advantage than otherwise. The carved desks in the school chapel have also been made by the boys, and a large wooden room for school games (120 ft. by 40 ft. and 30 ft. high) has been constructed and completed by them entirely, each part, after being passed, having the initials of the boy who made it stamped upon it.

Up to the age of 15 manual training is compulsory; by that time a boy has completed the whole of the woodwork course. At 15 he elects for a classical or a scientific course at the university; in the former case he drops manual work and takes Greek, in the latter he goes on to metalwork. Thus up to 15 manual work is regarded as educational; after 15, as professional. Of those who enter, 50 per cent. complete the whole school course, 50 per cent. from four to six years. Of the graduates, 95 per cent. go to college. The principal is convinced that the manual work does not interfere with scholarship—"The boy does his Greek better, not worse, for the manual training." The school has this year and two years ago divided honours in classics at the Yale Entrance Examination with the Hill School, Pennsylvania, one of the most distinguished of the purely classical preparatory schools. Though the school is apparently the first of its kind, two others—Detroit and Ashville—have already been founded on the same lines.

Training Schools for Manual Work.—The opinion is general in America that effective manual training cannot be carried on without a supply of educationally trained specialists to act as organisers and supervisors, and, where possible, as teachers. The ordinary teacher who has taken manual training as one of a number of subjects in a training college curriculum may do useful work in the subject, but only if there is a specialist supervisor behind. There are several training colleges which provide such specialised courses, especially the Teachers' College, Columbia, the Pratt Institute, and the Sloyd Training School at Boston. A certain supply also comes from technical institutes and colleges in which mechanical work forms a part of the course, but it is doubtful whether the subject would retain much educational vitality, especially in the lower grades, if these formed the only source of supply. When the courses of these training colleges are examined, it will be apparent that nothing corresponding to them at present exists in Great Britain, and that the first thing to be done in this country, if real effect is to be given to the recent decision of the

Board of Education, which makes manual training a necessary part of the elementary school curriculum, is to organise such manual courses in connection with our existing training colleges.

The *Teachers' Training College, Columbia*, is an integral part of the Columbia University, New York, and is generally recognised as the highest training college at present existing in the States. Amongst the specialised courses it provides are two in manual training for primary and secondary teachers respectively, in each case of two years' duration, and requiring as a preliminary condition four years in a high school, followed by two years' academic course at a recognised college, or two years' teaching experience. The time-table is roughly as follows:—

First year:	Manual Work	12 hours per week
	Mechanical Drawing	2 " "
	Fine Arts	2 " "
	Educational Lectures	6 " "
Second year:	Manual Work	10 " "
	Mechanical Drawing	2 " "
	Fine Arts	2 to 6 hours per week
	Educational Lectures	5 hours per week

The lectures for the primary and secondary teachers are the same, the variation being in the manual work. Primary teachers do the light work used in the lower grades of the elementary school—weaving, clay modelling, paper cutting, etc.—and the Sloyd woodwork used in the upper grades and the advanced woodwork of the secondary school. The secondary teacher confines himself entirely to the woodwork and metalwork used in the secondary schools. In either case a certain number of extra subjects may be selected, and students are encouraged to correlate mechanical with art work.

At the Pratt Institute the course is for elementary teachers only, and lasts two or three years. Candidates must be graduates of a high school.

First year:	The Light Manual Work of the Lower Grades	2 afternoons a week
	Mechanical and Architectural Drawing	1 day a week
	Fine Art, including Freehand Drawing, Clay Modelling, History of Art, etc.	2½ days a week
	Educational Lectures and Practice	Half a day a week
	(The first year is thus mainly given to Art.)	
Second year:	Woodwork for Upper Grades	1 day a week
	Lighter Work for Lower Grades	Half a day a week
	Designing for Manual Training	" "
	Wood-carving and Leatherwork	1 day a week
	General Art	2 days a week
	Theory and Practice of Education	Half a day a week

(As compared with the Columbia course, it will be seen that it lays much greater stress upon art work, and that the manual training is confined to the kind of work done in the elementary school.)

The *Sloyd Training College, Boston*, is conducted by a Swedish teacher, Mr. Larsson, an alumnus of the famous seminary at Nääs, in the south of Sweden, and the course consists of bench woodwork, based on Sloyd principles. It is exclusively educational, and has no direct industrial aim. The system has been generally adopted for use in the elementary schools of Boston, and, in a more or less modified form, prevails widely in the American elementary schools. The woodwork courses for upper grades at Columbia and Pratt, though differing considerably in detail, largely express the same educational idea.

The course lasts one year of 34 weeks. Manual training occupies 25 hours a week; educational lectures and practice, about eight hours a week, the lectures being partly given by the Harvard Professor of Physiology, and partly taken at the Massachusetts Institute. Twice a week the students teach in the elementary schools. As originally established in 1891, the course was a mixture of the Russian or exercise method and the Swedish, but by 1897, with the growth of educational interest, the former element had been completely dropped. The principal proposes to develop a further course for high schools to replace the technological wood course of joints, etc., which at present, except where art study has a modifying influence, is the prevailing system. No text-book is published, the principal holding that the rigidity of detail which would inevitably be involved would injuriously affect the educational value. Only trained teachers or college graduates are admitted to the course.

Visiting the class, I found one student who had taken a year's course at the Massachusetts Institute of Technology—admittedly the most perfect institute of higher technical training in the States—his course including carpentry and joinery. He compared the work in the two schools thus: At the Institute the pieces of wood handled were larger and heavier, the work rougher and less exact, making less demands on the thinking power, but probably more useful for trade purposes. The work at the Sloyd school taxed the skill and intelligence more, and the physical strength less, and was, therefore, much better suited, in his judgment, for use in a school. The school is in dingy surroundings, and the accommodation quite inadequate to turn out the number of teachers required. With 60 applications for admission, there is only room for 20 students, and there can be no doubt that under the present conditions young men of enterprise would be more attracted by the finely equipped Institute of Technology. It excites some surprise that a city like Boston, justly proud of its achievements in education, should allow the training school from which nearly all its elementary teachers in this important department are derived to work under such adverse conditions. The school has turned out 200 graduates, who instruct 50,000 children.

On a comparison between the three colleges, it is significant that the institute (Pratt) founded originally to aid industrial work lays the greatest stress upon art. Perhaps this is due to the influence of the Paris Exhibition of 1867, in which English and American manufacturers were severely handicapped by the lack of the artistic element in the workman.

Professor Hanus on Manual Training.—Professor Hanus is the head of the Education Department of Harvard University. He expressed himself to me as strongly in favour of manual training on the following grounds:—

1. Educational value and toning effect on both intellect and character, lasting up to 17 or 18.

2. Vocational value, the work being continued up to the industrial level. "In cities boys will never learn to use their hands unless they learn it in school; country life, on the other hand, is a life of 'chores.'"

3. Social value. "Nothing else will give sympathetic insight into the industrial life on which modern society is built."

4. Discovery of aptitude and training in choice. The modern high school should have every side of work, so as to discover latent talent which might otherwise lie undeveloped and be lost to the community. He holds, further, that not merely educational manual training but industrial manual training should find a place in the high school. The high school, he thinks, is developing into an elective institution with many departments, including manual training, and he believes this is a better solution than separate specialised schools, because—(1) Specialised schools would tend to become class schools, and (2) a general school maintains a wider outlook and better sense of proportion. The culture element is not excluded by such developments, unless by culture be understood classical culture. *Culture is not given by language study but by literature study*, which at school can only be through native literature or translations.

General Conclusions on Manual Training in America.—1. Manual training in American schools derives its strength from two independent motives :—

(a) The educational working up from the kindergarten.

(b) The professional working down from the technical colleges.

The great preponderance of opinion both among educationists and industrialists is in favour of making it in some form or other universal in the elementary and secondary schools.

2. The light work done in the four lower grades of the elementary school (6 to 10) is a development of kindergarten work.

3. The bench woodwork done in the upper grades is in the main either Swedish Sloyd or based on the same general principles.

4. The manual course in the high school is largely technological, and based on the Russian trade-school work exhibited at the Philadelphia Exhibition in 1876. The system has life and vigour, and produces results of immediate vocational value, but unless carefully watched is apt to fill up the pupil's mental horizon with the fascination of mechanical detail. For this reason, as well as for economy, some educationists advocate the elimination of the machine-fitting work of the fourth year. In some high schools there is also a movement to make the manual work more definitely educational by correlating it with the art department and with the teaching of mathematics.

5. This division into educational and technological has psychological justification. As an instrument of brain development the value of manual training ceases about the age of 15 or 16, or shortly after entrance on the high school course. Up to this point, therefore, it should be treated as part of the general education prescribed for all: from this point on it should form part of a specialised professional training.

6. Actual trade work is not a good form of manual training for promoting brain development, because it seeks to cultivate manipulative skill to the automatic point, and when work becomes automatic it ceases to require mental effort.

7. At the same time, trade work has a special value of its own for the formation of moral habits and the building up of character, particularly in the case of pupils of inferior intelligence and morale.

8. Such distrust of manual training as exists seems rather a survival from the traditions of an older curriculum than a living educational force. It is intended precisely where educational

investigation is most scientific and profound (viz., in the education departments of such universities as Harvard, Columbia, and Chicago) that belief in its value is most absolute.

9. The movement in favour of manual training so universal in the State schools is beginning to make itself felt in the private schools in which the sons of the well-to-do are prepared for the older universities.

10. Though manual training tends to become universal in the States, there is no movement in the direction of a technical school, pure and simple, without the culture element. The manual training high school has a strong culture side, and even technical institutes like the Massachusetts Institute and the Armour Institute at Chicago, though their students have been through high schools, insist on a study of language and literature throughout the course. An unrelieved technical course, it is felt, would at best produce a mere worker, not a citizen, and not the best kind of worker either.

Universities.

American universities are of two distinct types—(1) universities of private endowment, which are situated mainly in the East, and include the oldest and best-known foundations, such as Harvard and Yale (the Oxford and Cambridge of New England); and (2) the State universities, maintained by taxation, which form the dominant system in the West and Middle West. I shall confine myself in the main to the second, as being at once less known to the English public and richer in suggestion for our own provincial colleges.

Their distinctive features are:—

1. Co-education.
2. The absence of a residential system.
3. Flexibility of curriculum, Latin being optional, and engineering, mining, agriculture, dentistry, pharmacy, etc., playing a large and sometimes a predominant part.
4. The "accrediting" system.
5. Military training. (The Federal grants which most of them enjoy for technical departments cover military training also.)

Their strength, as against the older universities, is that they are the head of the common school system, supported by public money; their weakness, that they have not the same endowment or opportunities for advanced work.

The three I visited were those of Michigan, Wisconsin, and Minnesota. Michigan is the oldest and most famous of the State universities; its actual life dates from 1837, and geographically it forms the point of division between the Eastern Private University and the Western State University. Situated in the small town of Ann Arbor, which forms a mere adjunct to the university, it has developed a strong academic tradition of its own. The students number about 4,000, of whom some 800 are women; about 1,400 pursue literary as opposed to scientific or technical studies. The teaching staff consists of 126 heads of departments and independent lecturers, and 180 assistant lecturers, demonstrators, etc. The primacy which Ann Arbor enjoys among the State universities is due to the wise policy of its founders, who decided at the outset to establish preparatory schools under university control in various parts of the country rather than to concentrate the State grant upon central university buildings. This gave the university enormous

directive influence throughout the State, and led to the establishment of many high schools in emulation of these branch university schools. As the high schools developed, the university dropped its local branches and concentrated. This growth explains the position of peculiar influence which Ann Arbor occupies in relation to the high schools, and out of which has sprung the accrediting system, and also the fact that in post-graduate study it is admittedly superior to the other State universities.

Madison, Wisconsin, comes next in age and importance. It has in round numbers 4,000 students, of whom 1,500 are women; its total income is about £130,000, of which only £18,000 comes from fees, the main portion being derived from a State tax of about three-fifths of a penny in the £. Though the university does not stand quite so high in academic reputation as Michigan, its buildings are on the whole better; the library is perhaps the finest belonging to any State university, and alike in accommodation, in organisation, and in the collections it contains is such as many of the older universities might well envy. It owes its advantage to the fact that it consists of two libraries in conjunction—the State Historical Library and the University Library. The volumes number about 250,000; there are also 15,000 bound volumes of newspapers, chronologically arranged, and a unique manuscript collection bearing on the early explorations and settlements west of the Alleghanys; indeed, the collection of books on American history is perhaps the best on the continent. One thousand periodicals are taken in, of which 700 are technical, and the building contains seminar rooms and departmental libraries for each of the principal departments of study. The annual expenditure is—books, £3,600; management (including salaries, etc.), £5,000; maintenance of building, heating and lighting, etc., £3,400. Independent of the seminar rooms there is reading accommodation for nearly 500. The university also possesses a geological collection of rock laminae (20,000), which the authorities claim to be the largest in the world. The two chief technical schools are those of agriculture and engineering. The former has been remarkably successful in securing the confidence of the farmers, and thus, to use the words of its head, “contributes to carry the rest of the university in the State Legislature.” In the latter the students have grown from 242 in 1896 to 725 in 1903—exactly treble.

When it is remembered that the university is barely 50 years old, and that the bulk of its revenue is derived from the taxation of a district whose settlement goes only a few years further back and which is still in the main agricultural, these figures are sufficiently astonishing.

The university at Minneapolis, Minnesota, is still more recent, and has not therefore reached the same position as Madison. The university buildings cover ground which 40 years ago was the scene of an Indian massacre. The students number 4,000, of whom 1,300 are women. The funds are derived from the same source as those of Madison, but the income is not so large, the difference being discernible in the payment of the teaching staff. There is therefore less actual research or post-graduate work, and the seminars are used for senior undergraduate study. The most important technical schools are those of agriculture and mining. As in the other mining schools (Queen's, McGill), an annual visit to the mines of from four to six weeks is a part of the course. This is

"a solid trip, and not a junketing excursion"; the students work in the mines alongside the regular miners during the day, and make a report every night, illustrated by drawings, of the day's work. The cost of the trip (£25 to £35) falls on the student, who generally meets it by taking paid work in the summer vacation. This union of academic and industrial work is the essence of the system, and has completely changed the attitude of employers. The older generation regarded college students as "tenderfeet"; the newer give them the preference, but insist that they shall be "the right sort."

The Accrediting System.—The accrediting system is the method by which the universities in the Middle West and West admit pupils from "accredited" or recognised high schools without entrance examination. It began in 1872 at the University of Michigan (Ann Arbor), and was the result of the drawing together of the State university and the State high schools for the purpose of mutual support. At first a committee of the professors paid an annual visit to the school and conducted a complete inspection and examination. Soon this visit became triennial, and was confined to inspection; finally, as the work grew still heavier, it was taken over by a special university inspector, who reported to the heads of the departments in the university. The inspector visits the schools *without previous notification*, and his inquiry is exhaustive. If his report is satisfactory, the high school is "accredited" for three years. Graduates from such an "accredited" school are admitted to the university without examination if certified by the principal of the school as having studied the subjects required by the university, and recommended by him as capable of pursuing university study with profit. The responsibility is thus thrown on the school, the reputation of which depends on certified students proving satisfactory, for a certified student breaking down is liable to be sent back. So strongly do the schools feel the responsibility that numbers of students go up and pass the entrance examination whom their principals have refused to certify. The advantages claimed for this system are:—

For the university: (1) The standard of the certified student is higher. This is shown by the figures of the first nine years' working of the system, based on 1,000 students and 10,000 acts of examination. (2) The attendance is increased owing to the interest aroused amongst the high school pupils by the visit of the university inspector.

For the schools: The visit of the inspector is a powerful stimulus (i.) to the teachers, with whom he holds conferences, discussing difficulties and making and hearing suggestions; (ii.) to the pupils, in whom it arouses a spirit of inquiry about the university, and lends dignity and importance to their work; (iii.) to the localities, which think much more of their school and are more ready to support it if it bears the stamp of university approval. Finally, it provides governing bodies with an easy test of school efficiency.

The number of schools accredited by the University of Michigan, originally 16, has now risen to 250. As compared with the rival system of entrance by examination only, which is maintained by the Eastern universities, it possesses the great educational advantage of leaving the schools a freer hand in the choice of curriculum, and the still greater one of removing the well-known evils which attend the preparation by one set of men for examinations conducted

by another set. On the whole, the private schools, so far as I have been able to learn, favour the examination method, on the ground that it is a stimulus to work, and provides a useful standard. At a conference held at Baltimore in 1902 by the colleges and preparatory schools of the Middle States and Maryland, the subject was debated at length. Five of the speakers were against the examination system, including James E. Russell, the Dean of Columbia Teachers' College, New York, and only two in favour of it. The balance of argument was overwhelmingly against, the main points being:—

1. That the head of a school must be a better judge of the capacities of his pupils, whose work he has seen for years, than an examiner who views it on a single occasion and under abnormal conditions.

2. That the preparation for outside examinations has a ruinous effect on the system of instruction.

The arguments of its supporters, on the other hand, implied incapacity, or slackness, on the part of the school teacher.

In Minnesota the work of inspection is carried out, not by the university, but by a State High School Board, of which the university president is chairman, and which appoints a high school inspector. This system is closely parallel to that of the Central Welsh Board in its relation to the secondary schools of Wales. The attitude of the private schools may be explained by the fact that their pupils are largely the sons of rich parents, and less prone to exertion, and that outside pressure is therefore welcomed as an ally.

At a juncture when new universities and new secondary schools are being called into existence in England, no feature of American education seems to offer more helpful suggestions than the accrediting system of the Middle West.

Seminar System and Johns Hopkins University.—The university was founded by private endowment (£1,400,000) in 1876. The first president saw that there were plenty of universities and colleges of the ordinary undergraduate type, and that what the country needed was a university for the "graduate study," which at that time could only be secured by going to Germany.

The method is based on the German seminar, of which it has adopted the name, but provides for more constant and systematic intercourse between student and professor. While the German seminar meets weekly, the American meets every day, and the student receives far more individual attention. The course, again, is more exacting, the minimum being three and the average four and a half years. The aim is to train in methods of original investigation—in short, "to transfer to literary studies the methods of higher work in science." The work is based on the preparation of the student's dissertation for the doctorate. At every stage, first in outline and subsequently in complete form, chapter by chapter, this is considered and criticised. Each department has its own seminar room furnished with a departmental reference library, not arranged with benches for a lecture audience, but with a single table and chairs for common work.

This was at first the sole and is still the main work of Johns Hopkins. An undergraduate college, chiefly for the locality, has since grown up in the university. The effect on higher study in

America has been rapid and far-reaching. Not only have a large number of distinguished specialists been produced, who have tended to raise the level of American learning, but post-graduate study has become the ambition of the American university and that which differentiates it from the mere college. Few universities now but have their seminar rooms and departmental libraries, though it must be admitted that in many such cases they are at present only utilised for undergraduate work of the third and fourth years. But the growth in post-graduate work since Johns Hopkins was founded has been enormous. In 1871 there were only 198 post-graduate students in the States; in 1896 the number had risen to 4,919, or very nearly one-quarter of the total number of university students of all stages in Great Britain and Ireland. The following list shows the subsequent careers of men who have taken the Johns Hopkins Ph.D. degree from 1878 to 1899:—

Professors and lecturers at universities and colleges	359
Professors and lecturers at higher technical institutes	30
Masters in secondary schools and professors in training colleges..	30
Government service (Geological Survey, Statistical Bureau, etc.)..	30
Professional men	42
No record	23
Total	514

The great bulk take up university teaching, but there is an increasing demand for them from the high schools, the feeling being that the man who knows most is likely to prove the best teacher, and that lack of pedagogic skill at the start will be made up for by greater inspiration. The evidence both at the schools and universities supports the view that the Ph.D. candidate for a school post would have the advantage over a B.A. who had also been through a course of training, and would command a higher salary, and that this tendency is on the increase. On the other hand, it must be remembered that the American high school is organised on the basis of specialist teaching in each department.

The system of our own older universities—at least, of Oxford—is less favourable to post-graduate work. The explanation is to be found in the difference of the undergraduate course. The American university has no “honours” schools for the initial degree in which the energies of the best men are devoted rather to cover an immense extent of ground amassing the results of other people’s investigations than to cultivate the power of acquiring knowledge by their own. Thus while the actual attainment at the initial degree is by no means so high as with us, at all events for the best students there is a truer conception of learning, and a far greater proportion go on to higher work and research. The question has repeatedly been asked of me, “What kind of men should we select for Rhodes scholars? We should, of course, prefer to send graduates, but no encouragement seems to be given at Oxford to post-graduate work.” In reply, I have pointed to the research degrees recently established at Oxford, and to the existence of a body of professors who cannot under the “honours” system get men to attend their lectures, and would, no doubt, regard a supply of keen students anxious to learn, and not to “get their first,” as a godsend. An Oxford man who desires to see his old university resume the place it once held as the centre of learning for Great Britain may be allowed to hope that this will be the solution adopted.

The Schools of Applied Science are in closest touch not only with the professions but with the great industries—not only law and medicine, but dentistry, pharmacy, etc., mining, engineering (electrical, mechanical, civil, etc.), agriculture. For example, the largest school of dentistry in the world is a department of the North Western University, Chicago. Close connection is maintained with the industries (*a*) by encouraging the professors to take private practice within reasonable limits; (*b*) by encouraging and, to a certain extent, requiring the students to take industrial work during the vacations. Thus, in mining and agriculture about a year's work of this kind is necessary for the degree. The result is a very living connection between the academic and the practical, and more and more the industrial leaders look to the technical departments of the universities to supply the higher kinds of skilled direction. It is in the engineering schools that the growth has been most remarkable: at Madison (Wisconsin) the number of students has trebled in seven years.

Ordinary Undergraduate Course.—The normal length is universally four years. The arts course varies greatly in character from absolute "freedom of election" at Harvard, where it is possible for a student to select the 17 units composing it from 17 different subjects, to the "group" system of Yale. Some universities, like Chicago and Minnesota, prescribe a rigid course for the first two years, but allow "free election" for the third and fourth. The weak point appears to be a tendency to scrappiness. There is too little continuity of study from year to year, and in some universities (*e.g.*, Chicago) the study unit is a half or even a third of a session. The science course is comparatively free from this defect. The absence of honours courses has already been noted.

Modern Languages.—There is a growing tendency (still more discernible in Canada) to require a reading knowledge of French and German from seminar students and students of science, in order that they may be able to consult monographs of foreign scholars. As in the schools, German is regarded as the more important. Both points deserve our attention. There is a real danger lest in the reorganisation of English secondary schools German may disappear as a school subject. Where a curriculum prescribes one modern language, as it so often does, the school naturally selects that which is most easily taught—*viz.*, French; in this way German has been practically banished from the Welsh secondary schools, to the serious prejudice of higher study in the Welsh University Colleges.

Physical Training.—The American university controls physical exercises and games to a far greater extent than with us. Physical training is a regular university department, under a highly qualified medical head, who has a seat on the faculty or senate. The gymnastic course is largely remedial, and in most universities compulsory for at least the first year. The games and athletics are generally under the control of an athletic committee, consisting of professors and captains of athletic clubs, the former being in the majority. No student is allowed to represent his university in matches or competitions unless he passes the inspection of the director of physical training; in many cases the faculty prescribes as a further condition satisfactory attendance and work.

Social Tone.—The absence of any feeling that manual occupations are derogatory, which forms so marked a feature of

American life, is equally noticeable in the universities. Numbers of students support themselves at college, not only by working with their hands in the vacation, but even by undertaking what might be regarded as menial offices for their fellow-students. This is seen not only amongst the men, but at the women's colleges of the highest standing—e.g., Vassar and Wellesley. No social disqualification is entailed; several cases were pointed out to me of students thus employed who were influential leaders in athletics or in literary clubs.

Loyalty of Old Students.—The attachment of old students to their university is peculiarly warm, and an invaluable source of strength; our nearest parallel is the feeling of an "old boy" for his public school. Almost every university has its "Association of Alumni," which keeps in close touch with its *alma mater*, having permanent quarters within her walls, often publishing a regular magazine (e.g., the *Michigan Alumnus*, published monthly, the *Minnesota Alumni*, weekly, etc.), and in general promoting her interests and development in every direction, both by purse and influence. New professorial chairs, new buildings, scholarships, special museum collections, etc.—it would be difficult to find a university whose life has lasted a single generation that cannot show some such benefaction from its alumni. The value of this support can hardly be overrated. Graduates penetrate into every walk of life, and are not, as with us, confined to a few learned professions; and wherever they go they become centres of active influence for their old university.

General Support of the Public.—Public and industrial life on the one hand, and university life on the other, so interpenetrate each other that it is not surprising to find that the American public believes in university education, and supports it with American munificence. In addition to the Federal territorial grants of 1787, 1862, and 1892, and the large appropriations of the State legislatures for State universities, no less than 40 millions sterling have been given in the last 30 years to universities and colleges by private benefaction. The criticism must here be made that the donors seem often to have had too little sense of the truth that it is primarily men and not buildings that make a university, and that immense sums lavished on accommodation and equipment will be largely wasted unless the professors who are appointed to use them are provided with salaries which make it possible for them to give their whole time and undivided energies.

The growth in university students is shown in these figures:—

	1872.	1897.
	Per million.	Per million.
Excluding professional and technical courses	590	1,210 (1895)
Professional courses.....	280 (1889)	740 (1896)
Scientific and technical	242	337
Total number, taking college and university courses of all kinds, about	110,000	
The corresponding number in the British Islands is a little over	20,000	

Agricultural Colleges.

The great development of higher agricultural education has been connected both in the States (and also in Canada) with the working of experimental stations. These were started by an Act of Congress

of 1887 giving each State a grant of £3,000 for the maintenance of such a station. At first they suffered from lack of competent men to manage them; now there are 52 such stations, the directors being partly men of science and partly practical farmers who have graduated in agricultural colleges. Their influence is due, first, to the free distribution of reports by the Central Federal Agricultural Bureau; and, secondly, to the way in which the State agricultural colleges have used them both for the training of young farmers and for the direct improvement of the agriculture of the district.

U.S. Bureau of Agriculture, Washington.—Before visiting any of the agricultural stations I called at this office, with a view of gaining a general idea of the character of the work.

The expenditure of the department is nearly two million pounds per annum; the work is partly investigation in conjunction with the State experimental farm stations, but mainly the dissemination of information amongst the agricultural classes. The success of the work depends upon:—

1. The free distribution of Government reports in popular form.
2. The growth of farmers' institutes, which have educated the farmers up to reading and making use of these reports, and which are largely due to the influence of the State agricultural colleges.

The following are instances of the way in which the department has helped to develop the agriculture of the country:—

1. *Beet*.—The national crop has gone up from 8,000 to 400,000 tons in consequence of the publication by the department of a research map showing the districts in which it could be profitably grown.

2. *Macaroni Wheat*.—Introduced three years ago by the department; crop, first year, 35,000 bushels; second year, 2,000,000 bushels; third year, 10,000,000 bushels.

3. *Rice*.—Introduced six years ago. Crop now 400,000,000 pounds; land formerly 2s. per acre, now £10.

A large part of the work consists in the production by cross-fertilisation of new crops suitable to soils hitherto undeveloped for farming purposes.

The secretary laid great stress on the fact that *the department took the initiative and did not wait for applications*. The use of new crops must be started and pushed by the department—the farmers would never touch them otherwise. Here is an essential difference between the attitude of Government departments in Great Britain and in the United States. When the former print valuable information persons interested are left to find out the fact for themselves, and to make application for copies, for which they usually have to pay; an American Government department considers that the printing of such information is merely a step towards its real object, which is to put it into the hands of every person in the country to whom it is likely to be of value in conducting his business. Nor does the department limit itself to supplying the information; £60,000 is spent annually on supplying seed specimens to farmers in different parts of the country.

The experimental farm stations and schools which I visited were those of Madison, Minneapolis, Guelph, and Ottawa.

Madison.—The farm is part of the University Agricultural Department. The work of this department is divided into two courses: (i) the short course of two years for lads who are going

to be farmers; (ii) the long course of three years for students and teachers. It is the short course, in the opinion of the professor, which forms the life of the department. Through it the university gets in touch with the farmers, and makes them feel that it is their friend. The students are in constant touch with the experiments on the farm, the work of which involves an expenditure of no less than £6,000 a year—£3,000 from the Federal Government and £3,000 from the State. Much of the investigation on the farm is devoted to the discovery of the kinds of grain best suited for growing in the State. In connection with it are 20 different centres throughout the State at which subsidiary experiments are conducted. A good example is the experiment with different kinds of oats, conducted over several years, which proved that Swedish oats would yield in Wisconsin from eight to ten bushels per acre more than any other variety. The acreage available for oats in Wisconsin is over two million, so that if this discovery were fully taken advantage of the agricultural produce of the State would be increased to 16 million bushels, which at the low average of 15 cents a bushel would give an annual increase in the value of this crop in the State of 2,400,000dols., or nearly half a million pounds. The information thus gained is disseminated by printed circulars, no less than eight million being sent out free in the year. The growth of varieties thus selected is promoted by a system of supplying seed to leading farmers, who sign an engagement to grow and sell it in the neighbourhood at a reasonable price. In addition to the two courses mentioned above there is a special dairy course for training dairy superintendents, cheese factors, etc., attended mostly by men. The numerous creameries now existing in Wisconsin have developed out of this college course. The growth of the department has been from 26 students in 1890 to 500 in 1903. Considerable original work is done, and the inventions of one of the specialists, Dr Babcock, are in use all over the world. The department is warmly supported by the farmers, whose associations frequently ask for State appropriations to strengthen special parts of its work.

Minneapolis.—Here again the experimental farm and the University Agricultural Department form one organisation. There is, however, this difference, that the latter is of high school and not of college grade; the students, boys and girls, are mainly of the high school age—14 to 18—and the course is purely technical, embracing not only dairy and farm work, but, as at Hampton, manual trade work of various kinds, blacksmithing, etc. The only culture element provided is civics. This omission is a grave defect, and makes the training distinctly inferior to that at Hampton. About 10 per cent. of those who complete this high school course go on to the college. The technical work itself seemed very good; an interesting feature was the practice in planning farms. A student is given a map plan of a piece of land, and required to plot it out for farm work to the best advantage, indicating the rotation of crops six years ahead. The scheme thus drawn up becomes the subject of class criticism. In addition to the college course there are also short courses for farmers of from four to eight weeks. The same kind of work also is done for the farming industry by means of experiments, as at Madison.

Guelph.—In my visits to agricultural authorities in the States I was strongly advised not to leave America without seeing the college at Guelph. More than one of the experts at the State

colleges described it as the highest type of agricultural college on the Continent. One used the phrase, "It is the Mecca of American agriculturists."

Guelph is the agricultural department of the University of Toronto, but situated separately 40 miles to the west. Its remarkable success is due to two causes:—

1. The capture by the staff of the farming population through the organisation of farmers' institutes.

2. The insistence upon a sound basis of exact science in the course from the very first.

In 1884 the college was reorganised; up till then it was utterly distrusted by the farmers. Students could only be secured by paying them to attend, and the agricultural influence in the State Legislature was hostile. The new principal saw that nothing could be done till the confidence of the farmers had been gained. For the first year or two, accordingly, he devoted several weeks each winter to visiting the different rural centres and holding public meetings. Three visits were paid each week; a day and a half was spent in each place, with a succession of meetings, in which short speeches were made leading up to discussion, the object being to get "warm" farmers to take part. The result was a rapid and complete revolution of feeling; the farmers found that the professors were practical agriculturists, and eager to discuss practical questions with practical men like themselves. In each centre farmers' institutes were established to continue the debates, and as the work grew competent lecturers and speakers were enlisted from outside. Out of these meetings grew also the women's institutes; it was found that women came in large numbers to the meetings; many questions arose hardly suitable for discussion by a mixed audience, and separate meetings with women speakers began to be held dealing with home life and domestic management. These were so well attended that it was felt they supplied a real want, and separate women's institutes were established. Now the two organisations work together; when meetings are held in any place the two institutes meet separately in the afternoon, but combine their forces in a joint evening meeting. The membership, etc., of the institutes now stands as follows:—

	Farmers' Institutes.	Women's Institutes.
1. Members	23,754	4,505
2. Meetings	837	619
3. Attendance	126,459	22,013
4. Papers and addresses	3,377	—

The interest thus aroused has been maintained and developed by means of the college experimental system. Like the agricultural colleges in the States, Guelph maintains an experimental farm whose work is largely directed to the improvement of stock and the discovery of varieties of crops specially suited to the district. These experiments *extend over at least five years*, and the co-operation of the farmer is invited and secured in the following way: Of oats 225 varieties were grown for five years in experimental plots on the farm; six which showed the best results in yield of grain, length, and weight of straw, etc., were selected for further testing with the co-operation of the farmers. Circulars were then sent out inviting co-operation—farmers receiving the seed with directions how to carry on the experiment, and giving a written undertaking to follow those directions, to watch the results, and to

send in a careful report. These experiments are not supervised; the farmers take a far greater interest in them because they are entirely their own (I saw a letter from one farmer stating that 4,000 people had been over to see his experiment in the course of the season). At the same time, no practical difficulty exists in estimating the value of the results. Dr. Zavitz, the head of the experimental section, assured me that it was quite easy to tell from the way in which the report was drawn up whether its contents could be relied upon for scientific determination. The results thus obtained are compared with those of further experiments on the college farm, and a final selection of one or more varieties made accordingly. Thirty experiments are carried on in the spring and five in the autumn each year; a farmer may select any one of the experiments he prefers. He gets the seed, but carries on the experiment otherwise at his own cost. The arrangement has thus the additional recommendation of economy.

Every summer members of the institutes are encouraged to pay visits to the college and the college farm, the greater part of the month of June being devoted by the staff to receiving them and showing them over the place. Only parties connected with the institutes are received, and the number of visitors last June reached the huge total of 40,000.

The department keeps its eye upon those who send in good reports, and draws them in as much as possible to its work in connection with the farmers' institutes. The growth in the influence of the college through these experiments may be gathered from the following figures:—

No. of farmers experimenting in	1886	..	..	..	12
"	"	1887	..	..	60
"	"	1888	..	..	90
"	"	1903	..	..	3345

In December a conference is held at the college to discuss the reports, to which are invited the experimenters, old students of the college, officers of the college, and speakers of the farmers' institutes, the expenses of the last being paid by Government. A report of the conference is afterwards printed and sent out free to these and to the farmers' institutes (about 40,000 copies). The report, it should be added, goes out as the report of the Agricultural Union, and not of the Agricultural College. By this means the collaboration of the whole countryside is secured.

There are two main college courses:—

1. The short course of two years for lads who are going to be farmers, success in which leads to the associateship of the college.
2. The long course of four years, leading to the university degree of B.S.A. (Bachelor of the Science of Agriculture) for professors of agriculture, Government organisers, etc.

The feature of the short course is that, while laying stress upon practical agricultural work from the very first, it contains a solid foundation of pure science. If only a smattering of applied science were given, as in the short course of some other agricultural colleges, the student at the close of the course would be unable to face the heavy scientific requirements of the third and fourth years of the long course, from which the supply of students would thus be cut off. It is the success of this long course that gives Guelph its special position amongst agricultural colleges. Only picked men of the honours stamp are allowed to go on to it; they must possess

promising ability, a good general education, and a sound practical training; a deficiency in any one of these points entails rejection. Thus the problem for the authorities is not how to induce students to stay on for the higher work, but how to select those qualified. Last year about 30 who had successfully completed the short course were rejected as not coming up to the special standard, and only about 15 allowed to go on. The long course contains throughout a strong culture element in the study of English literature and attendance at literary and debating societies, which forms a compulsory part of the curriculum. French or German is also compulsory. Thus the B.S.A. graduate is really an honours man, who can be recommended as qualified for responsible positions by (1) general education, (2) scientific and practical knowledge, (3) power of presenting it. In going through the laboratories and classrooms I observed that for the advanced work the seminar and thesis system was in operation. Between 10 and 15 graduate from this course each year, and it is not too much to say that Guelph graduates are getting hold of the whole public machinery of scientific farming in Canada, besides furnishing a large supply of professors to the United States.

The following list (not exhaustive) shows the positions held by them at the present moment.

1. Professors and heads of agricultural departments in universities, Government organisers, etc. :—		
In Canada	10	
Outside Canada, chiefly United States....	26	
	—	36
2. Assistants and demonstrators		24
3. Editors and assistant editors of agricultural papers ..		8
		—
		68

A graduate has just been selected as the Government Organiser of Agricultural Education for the Orange River Colony.

There is also a three months' practical dairy course, and various short courses of two, three, or four weeks for farmers in stock and grain judging, etc. The majority of the students come from the province of Ontario, a considerable number from the other Canadian provinces, and a few from the States. The wide reputation of the school is illustrated by the presence of 23 students from Argentina (the result of the Government action in sending seven three years ago) and 12 from the West Indies.

The distribution of the students is as follows :—

1. Two years' course	270	
Four years' course	20	
	—	290
2. Daily course		109
3. Specialised courses.....		25
4. Farmers' short courses		248
5. Domestic science courses (for girls).....		96
		—
		768

Great importance is attached to the library, which is open ten hours a day, and is managed by a librarian and two assistants. Two hundred periodicals are taken in, mainly scientific, and from £400 to £500 a year spent in the purchase of books, a grant which many university college libraries in this country might envy. The expenditure in round numbers is £11,600 on the college, and £2,400

on the experimental farm—a total of £14,000—which is about half the cost of the agricultural department at Minneapolis. Of the income, about £3,000 comes from fees, board of students, etc., the remaining £11,000 from the Provincial Legislature.

A women's department for training teachers for rural schools has just been endowed by Sir William Macdonald, the wealthy Montreal philanthropist.

The Lesson for Great Britain.—The conclusion to be drawn from the foregoing facts is unmistakable. The success of agricultural colleges depends on the confidence of farmers; the confidence of farmers can only be won by conferring *direct and obvious* benefit on their industry; such benefit can only be conferred by means of experimental work; experimental work entails substantial expenditure; such expenditure can rarely be derived from local sources, and *both in America and in Canada is provided by Government grant*. Our own Government grants for experimental farms (£200 a year to each) can only be termed grotesque. If the agricultural colleges and departments of this country are substantially to influence the agriculture of their districts, they must be given the means of conducting experimental work as it is conducted on the other side of the Atlantic. Until this is done the sums at present spent in maintaining teaching staffs, etc., will be largely wasted.

General Impressions of the Schools.

Teaching of Patriotism.—All countries use their schools to train citizens. In the United States this object assumes a special importance owing to the enormous influx of immigrants—Germans, Scandinavians, British, Italians, Hungarians, Bohemians, Russians, most of them ignorant of English. Patriotism is, therefore, almost a school subject, and the success with which it is taught is extraordinary. To quote one racy speaker, "The public school is the stomach of this nation, and digests everything that is put into it"; and another, "The public school is the laboratory of our national unity, the guarantee of our national future." This patriotic training may in its details seem at times overdone and theatrical, but there can be no doubt that it helps to create and foster a high ideal of American citizenship in the rising generation. Some of the quietest and least chauvinistic people I met, while prepared to admit that it had a weak side, were yet profoundly convinced of its value. In America patriotism belongs to the schools, and everyone is proud of it; in England it is left to be desecrated by the music-halls, and a large section of our best social workers are ashamed of it—a condition of things neither wholesome nor safe. Canadian schools in this respect resemble the American. Both teach a lesson to this country.

Relation of Teacher and Pupils.—There is far more co-operation between teacher and pupil than with us. The master, indeed, is much more a class leader than a class driver, and in no school did I observe the British tendency to regard each other as natural enemies. The result is unusual quietness and docility in the classes, and quietness of manner in the teacher. I often noticed that directions were given, even in a large room, without raising the voice.

General Level of Interest.—There is, on the one hand, a higher level of interest and intelligence in an American class than in an English one; on the other, the standard of attainment of the best pupils is not so

high. This, indeed, applies to educational institutions of all ranks. To quote President Roosevelt, "America has the advantage in a broader and sounder base of general education, but in England there are loftier pinnacles of individual attainment." The difference is due to difference of aim, and this again to difference of external conditions. Our schools are dominated by outside examinations, and organised for the winning of certificates and scholarships. The public judges their success by the number they win; the masters, knowing that this is the test on which their professional reputation depends, are forced in self-defence to concentrate their attention on the picked pupils, and to keep up a pace in class-work which will give their powers full scope. While the ultimate goal is still far off, a more immediate stimulus is supplied in the class prize. The ordinary pupil thus finds the work proceed at a rate with which he cannot keep up, while the prize, the immediate goal of ambition, he knows to be utterly beyond his reach, however hard he works. Naturally, he soon gives up the struggle, and resigns himself to the conviction that headwork is not for such as him. From this incubus the American schools are remarkably free. Everywhere there is State or university control, but it takes the form of inspection rather than of examination. There are few scholarships; indeed, the need of them is little felt; the high school course is free, and at the universities a healthy social tone, combined, in many cases, with an extended summer vacation, makes it customary for the poor student to earn enough before the session begins to pay his way through it. Where scholarships do exist, they are usually awarded without examination. Thus, at Harvard and Yale, the award is *on inquiry*; at Michigan and Chicago scholarships are attached to the accredited high schools of the university district either (as within the city of Chicago) one to each school, or a number to a group of schools, but in the latter case they are awarded in rotation, and there is no inter-school competition. In a few cases the award is on examination, but in most either on inquiry by the university faculty or on recommendation by the high school principal.

Add to this freedom from the pressure of external competition an almost complete absence of class prizes and all the machinery of class competition, and it is not difficult to understand why the pupil of moderate abilities follows the class work with so much more interest in America than he does in England. The aim of the American school is the education of all; that of the English, the instruction of the few.

Teaching of English.—In the ordinary secondary school subjects, with a single exception, the American schools have nothing to teach us. In classics and modern languages they are in general old-fashioned and comparatively inefficient, but there is one subject—namely, English—in which we have everything to learn from them.

The method will be best explained by a description of the work actually done in the McKinley Manual Training High School, Washington. The object is to make the class think and talk correctly, to cultivate logic through literature. Throughout *texts are used, not text-books* (either of grammar or rhetoric). The course is of four years, five hours a week.

In the first year the class is made to analyse paragraphs of the author who is being studied, and to recognise—(i) paragraph unity, (ii) chapter unity. This is supplemented by written descriptions on

subjects taken from home or school life. Thus is provided a valuable means of correlating school studies; e.g., one boy described the woodwork and exercises of the manual department, and at the end of the session gave a summary of the whole illustrated by drawings. History, too, is largely drawn upon for subjects, that of the first year being exclusively American. These written themes are discussed in class, with the object of producing "oral fluency" in simple narration and description, it being held that oral work provides better mental training, because all the parts of the subject have to be kept in the mind at the same time. The training is supplied by the study of the set author with analysis of chapter, paragraph, and sentence. If history be the material used, it is not a chapter but a "topic" that the pupil is set to prepare, the aim being not instruction but the development of the power of self-instruction. At the end of the first year the pupil should be able to present in oral description a coherent picture of some definite subject.

In the second year exposition and discussion come to the front, and with them what the American teacher calls the "brief"—i.e., the logical skeleton of the "topic." The subject matter is now *English* history and literature. No study of a text is begun till the whole of it has been privately read through. Thus, if "The Tale of Two Cities" be the selected text, the class is given all the English preparation time for two weeks to read it in, simple short stories being meantime taken in class.

The texts to be read fall into two classes:—

1. *The study list* for minute study, considerable portions being memorised: e.g., Burke on "Conciliation," Addison's "Sir Roger de Coverley," Milton's minor poems.

2. *The reading list* (ten books), of which only a reading knowledge is required.

The third and fourth years are devoted to the further study of authors so selected as to give with what has been previously read a general conspectus of the course of English literature. In the last year special kinds of composition are dealt with—e.g., in the first half-year the English essay; in the second the English novel. The "brief" method is continued from the second through the third year, and then gives way in the fourth to *essay writing*.

The class at which I was present was that of the fourth year, and consisted of 22 boys and four girls. Bacon's shorter essays ("Love," "Friendship," etc.), already read by the class, formed the subject of discussion. The connection between them was considered, as also the light they threw on Bacon's character and intellectual powers. The handling of the subject almost took the form of a debate, the master acting as moderator. One boy, starting from the essay on Friendship, gave a well-expressed exposition of Bacon's moral shortcomings, instancing the Essex prosecution. The master suggested what might be urged on the other side—the claims of duty as against personal feeling, etc. This led to further analysis, and after much argumentation *pro* and *con*. (clearly pointing back to previous discussions which had thoroughly interested the class), the debate reached this point—that the essay is really an essay not on friendship but on the fruits of friendship. The whole lesson seemed to me a remarkable piece of training in logic. Throughout the speakers were kept strictly to

Bacon's own writings and not allowed to stray off to his reputation. These discussions are the regular prelude to a formal written essay on the principle that "talking organises one's thoughts."

The course and method thus briefly described aims at several distinct objects: (a) training the reasoning powers; (b) cultivating readiness and accuracy of expression; (c) teaching the pupil how to consult libraries and find out things for himself; (d) fostering in him a taste for good literature. As regards (c) and (d) there can be no reasonable doubt that the ordinary American schoolboy is far ahead of his British or Canadian compeer. Canadian educationists maintain stoutly the superiority of their own schools, insisting that they are more thorough, but they make an exception for the study of English. The principal of a normal college in Canada excused the poverty of the college library to me with the remark that the Canadian high school graduate had not the same interest in reading or power of making use of a library as the American. Dr. Glashan, the school superintendent at Ottawa, told me that English was the one academic subject Canadian teachers admired as taught in the States; he added the qualification—"Their whole system makes better speakers, but not as good thinkers." In this there is probably some truth. Too little importance is attached in the States to foreign language study. In several manual training high schools many of the pupils go through the whole course without learning a word either of Latin, French, or German, though the authors of the educational report on which this admirable English scheme is based were careful to point out that "the best results in the teaching of English . . . cannot be secured without the aid given by the study of another language." Setting Latin composition aside, however, I doubt if our own secondary schools have any subject which can compare with that of English as taught in the States for training the reasoning powers and cultivating accuracy of expression. The essence of the difference seems to lie in this—that the American high school is primarily a finishing, and the English secondary school a preparatory, institution. The former turns out boys better equipped for understanding the life around them and carrying on self-culture, the latter gives a better grounding in those subjects the real value of which only emerges at the university stage. The one excels in all-round training, the other in specialised instruction.

The Predominance of Women as Teachers.—In the elementary schools this predominance is overwhelming, there being six or seven women to one man; in the high schools the proportion is about three to two. It is the feature that strikes one at once when visiting either a school or a training college. In the New Jersey Training College at Trenton, when the students assembled to receive the Commissioners, the bulk of the hall was filled with women, between 300 and 400 in number; on one side there sat by themselves, looking very much like fish out of water, 28 men! The salaries offered, as a high school master in New York explained, will secure first-rate women, but only third-rate men, the competition of well-paid business employments being so great. In the elementary schools, at all events in the lower grades, this is probably an advantage, but there seems a growing opinion that as a boy gets older masculine control for the full development of character is desirable, and a half-conscious sense of this is probably one of the causes why the manual training schools appeal so

strongly to boys. Indeed, where they exist side by side with the ordinary high schools, it is not impossible that the latter may be ultimately monopolised by girls.

Growth of Secondary Education in Recent Years.—The number of public high schools in 1860 was 40; in 1870, 160; in 1880, 800; in 1890, 526; and in 1900, 6,005. The private schools, which were formerly three times as numerous as the public schools, are now less than a third of their number with about one-sixth of the pupils. The total number actually attending secondary schools, public and private, amounts to the astonishing proportion of 55 per cent. of those who are qualified by age to be in high schools. The system is spreading to the country districts, where the small village schools are being replaced by the consolidated high schools, the children being transported by electric tram or other conveyance.

Canadian Universities.

I visited the Universities of Ottawa and Toronto; Queen's University, Kingston; and McGill University, Montreal. Toronto, Queen's, McGill, with Laval University for the Roman Catholics of the Quebec Province, and Dalhousie, at Halifax, the intellectual centre of the maritime provinces, are the five chief universities of Canada. Apart from Laval, they are organised in the main on the Scottish model, and, like the Scottish universities, owe their foundation to religious effort. They resemble the States universities—

1. In the freedom and self-government of student life.
2. In the custom of students earning the means of keeping themselves at the university by working in the long vacation. (They work on farms, mills, surveys, etc., or act as pursers and stewards on the river-boats, waiters at the hotels, bagmen, etc.)

3. In the development of schools of applied science.

They differ in having a greater rigidity of curriculum, and the division with which we are familiar in this country into pass and honours courses. The pass course seems, if anything, too exacting, requiring a number and variety of subjects which it must be difficult for the ordinary student to assimilate. They also differ in having provision for theology, which holds a recognised position either in the university itself (Queen's), or in constituent colleges (Toronto), or in affiliated colleges (McGill).

Canada is every whit as democratic as the States, and no social disqualification is created by honest work of any kind. "The best students I have come across in twelve years' experience of Canada," writes Professor MacNaughten, lately of Queen's, now of McGill, "have almost without exception been of this class." The seminar system exists, but really effective post-graduate work is confined to biology at Toronto, philosophy at Queen's, and physics, chemistry and applied science at McGill. The three universities require a modicum of science from art students, and either require or recommend a working knowledge of French or German in the case of students of science. The course is four years, as in the States, but high school pupils who pass a higher matriculation examination are excused the first year.

Toronto offers an interesting example of the federal system. The original university—Trinity—was connected with the Episcopalian

Church, and conducted on somewhat exclusive lines. Other churches accordingly developed denominational universities or colleges of their own. With the growth of academical feeling and the decay of sectarian bitterness these have gradually come together, merging their degree-granting power, except for theology, in a joint university. There are five such colleges, and, in addition, an undenominational university college supported by the State in order to provide teaching in the subjects for which the denominational colleges are not equipped. There are 2,000 students, of whom 700 belong to the medical and 400 to the engineering school. The staff numbers 168.

Queen's was founded and is still, though there are no tests except for the theological faculty, largely governed and supported by the Presbyterian Church. Its whole life and tone recall the old Scottish academical ideal of plain living and high thinking. Of all the educational institutions I visited on the American continent none left on me so strong an impression of doing high-class work with scanty resources. It is the one university which has a real faculty of theology, the course being, as in Scotland, post-graduate and involving three years' study after the four years of the arts course. It has no direct Government grant like Toronto, no millionaire patron like McGill, but has displayed a striking power of attaching its students and securing the loyal support of its constituents. It is essentially a people's university. In 1869, when the Government grant was withdrawn, a public appeal resulted in a sum of £20,000, contributed by 6,000 subscribers. In 1887-88 a similar appeal produced £50,000. In 1902 the students spontaneously raised £5,000 for a convocation hall in memory of Principal Grant, and did this in five months. The significance of this will be seen when it is remembered that 70 per cent. of the students work during the long vacation in order to support themselves in college. There are faculties of medicine and law, and a school of mines supported by the State, all doing good work, but the strength of the university lies in the literary and philosophical subjects. It possesses in Professor John Watson the most distinguished representative of moral philosophy on the continent, and boasts of being the one American university in which Aristotle and Kant are studied in the original languages. The buildings, successively erected to meet the growth of the university, offer another example of what can be effected with narrow means. They are substantial and well adapted for their purpose, and the architecture, though simple, has dignity and proportion. There are 850 students, 6 professors and lecturers in theology, 20 in arts and science, 15 in applied science, and 19 in medicine.

McGill College was founded in the 18th century by a bequest of a Scotsman of that name, and owes its growth, as well as its foundation, to a few wealthy benefactors (notably Lord Strathcona and Sir William Macdonald). The students number: in arts and pure science, 315; in applied science (mining, engineering, etc.), 276; in law, 40; in medicine, 434. The number of professors and lecturers is—in arts and science, 52; in applied science, 41; in law, 11; and in medicine, 76. While thoroughly equipped and doing excellent work on the literary side, McGill is particularly rich in science and applied science, and possesses in physics, chemistry, engineering, and mining a staff and laboratories which are unsurpassed by those of any American university.

The work is carried on in three extensive and splendidly equipped buildings, appropriated respectively to engineering, chemistry and mining, and physics, all the gift of Sir William Macdonald. The scale may be gathered from the fact that in the chemical department there are six large laboratory rooms for different kinds of work, capable together of accommodating over 250 students. They are specially equipped for advanced students, and the university claims that more original research is carried on in them both in pure and in applied science than in any other American university or school of science. The engineering building contains, in addition to other equipment, the Reuleaux Museum of Kinematic Models, believed to be the most complete in America, and largely consulted for purposes of reference by inventors. Each department is provided with its own reference library, which in engineering amounts to 6,000 volumes (£100 a year being spent in additions) and in physics to 5,000.

In architecture and in engineering a regular year of post-graduate study has been organised, and graduates from other universities, especially those in the States, have for several years resorted to the laboratories for research work. The method of thesis upon a special piece of experimental work is largely used for fourth year students. In engineering this takes the form of the working out of a complex practical problem, for which general data are given—*e.g.*, the designing of a bridge to suit certain topographical conditions, to bear certain strains, and not to exceed a certain cost. The importance attached to this is shown by the fact that it is a "failing" subject; if the bridge fails to bear the strains, the student fails to pass his examination. One of the chief bridge constructors has given it as his opinion that there is no place in America where this kind of work is done so well.

The careers of graduates form a remarkable testimony to the quality of the work. The management of the Anaconda Mines, Montana; of the United States-Zinc Co. and the Pueblo Smelting and Refining Co., at Pueblo; of the American Refining and Smelting Co., at Aguas Calientes, Mexico; and, most striking of all, of the Rio Tinto Co., in Spain, whose mining works are perhaps the largest in the world, are in the hands of McGill graduates. Of 332 bachelors of applied science, 16 are university professors, 18 presidents, managers, or superintendents of large industrial firms, 51 hold subordinate posts in such firms, 31 are in the State service, 14 on railways; total, 130. The remainder are largely civil or mining engineers in private practice. In short, McGill holds in engineering and mining much the same position that Guelph enjoys in agriculture. As South Africa came to Guelph for a director of agriculture, so the Chinese Government is applying to McGill for a field geologist. It is significant that the most remarkable token of confidence in the value of academical work to industrial development has been furnished in connection with McGill University. The decision of two great railway companies to establish and equip a department of railway engineering at McGill is one of immense importance to Canada. Not only will the new school enable these companies to push on their work in the North-West Provinces, but it will also furnish, in the staff of officials of real scientific attainments whom it will train, a body of men who will serve as centres of industrial development of all kinds in the new districts.

The main library of the university, apart from departmental collections, contains about 100,000 volumes, and accommodation for 150 readers. The annual expenditure on books is comparatively small—£500—but this is augmented by occasional gifts for special purposes; *e.g.*, £4,000 was received for the classical department the other day from Sir William Macdonald. The library possesses one special feature in a travelling section, embracing not only books but pictures and lantern-slides, intended to encourage the study of masterpieces, both of literature and art in schools, clubs, etc.

The whole institution leaves a strong impression of academic statesmanship and power of growth. It is to be hoped that the creation of a department of education and of a higher training college for Canada comparable with the teachers' college, Columbia, may soon engage its attention.

Canadian Schools.—I visited at Toronto two collegiate institutes (secondary) and one elementary school; at Brockville, a collegiate institute; at Hamilton, a secondary training college and collegiate institute; at Ottawa, an elementary school and normal college; and at Montreal, two high schools, one girls' private high school, one elementary school, and a normal college. Broadly speaking, the Canadian school system displays the characteristics of British rather than of American education:—

1. The primary and secondary schools are under different authorities, with the necessary result of lack of co-ordination. (At Toronto a single authority is on the point of being established.)

2. Rural and urban schools are more on an equality. The urban schools are not so well equipped nor the teachers so well trained as in the States; the rural are, on the average, distinctly better. In the States only 2 per cent. of the rural teachers have been professionally trained; in Ontario, though the training is less thorough, it is equally insisted upon for rural teachers.

3. The prize system seems more in use, with the natural accompaniments—the predominance of examinations and the tendency to emphasise instruction rather than education. (At the Jameson Avenue Collegiate Institute, Toronto, this was not the case: there were no prizes, and the school gave its own diploma, based not on examination but on general work.)

4. The co-operative attitude of master and pupil and the quietness and docility of the classes, which form such marked features of the American school, are almost as little apparent in Canada as in England.

5. The schools do not suffer, for the present at least, from the predominance of women teachers, nor from the leakage of boys in the higher classes. In those which I visited the bulk of the teachers were men and the proportion of boys and girls remained about equal up to the top of the school.

6. The secondary schools seem more traditional in tone and method than the primary or than the high schools in the States, which may be attributed to their classical heritage. At the same time, the compensating advantage given by classical study is largely being lost. Greek has been practically dropped, and after 1905 a regulation will come into force in Ontario which will apparently have the effect of killing out Latin also, except for entrance to the university. The secondary schools, in short, are in a state of transition, and there would seem to be some danger that they may fall between two stools, losing the intellectual grit of the old British

grammar school without gaining the spontaneity and vigorous life of the American high school.

6. Manual training is only just beginning in Canada, and, so far, is almost confined to the elementary schools. The only city in which I found it permanently organised was Ottawa, but Toronto is on the point of introducing it. In Montreal, in the eastern province, it has been introduced into all the schools, not by the education authorities, but by the foresight and liberality of Sir William Macdonald, the good genius of education in that district. Where introduced it has almost invariably been in the form of Sloyd woodwork. The principal of a collegiate institute in Toronto expressed to me a strong opinion in favour of introducing the work into secondary schools also. He believed that the boys would do their literary work with more spirit, and would have a larger and freer choice of careers. At the Hamilton Training College (for secondary teachers) the vice-principal, who was also the principal of the Collegiate Institute, expressed the view that manual training should be compulsory, and co-ordinated right up from the kindergarten through the elementary to the secondary school. One of the ablest and most convincing statements of the case for manual training I have seen is a short pamphlet by the principal of the same college, Dr. J. A. McLellan, an authority of weight in the philosophy of education.

7. French is the one book subject which is taught superlatively well, in this respect holding the same position in the Canadian that English holds in the American school. The cause is difference of environment. In Canada, English and French live side by side, and have to understand each other; for the American school, engaged in assimilating foreigners and inducing them to drop their own languages, English is the obvious and supreme instrument. The language method employed is the "direct"—i.e., through French itself, the meaning of words being explained, not by their English equivalents, but by pictures, movements, etc. Nothing could have been better than the lesson I witnessed at the McGill Normal School, Montreal.

8. It is in training colleges that the weak spot of the Canadian system shows itself. The length of training for the highest certificate is only a single year, and the lowest certificates available for the elementary schools can be got on six or even four months work. This places the Canadian schools at an obvious disadvantage as compared with the American. The ordinary normal course in the States for elementary teachers lasts two years; the higher training colleges—e.g., Columbia, Ypsilanti—extend the course for secondary teachers to three or four years. A comparison between Ypsilanti and the chief training college of Canada at Hamilton will bring out the difference. Ypsilanti possesses a "college" organisation of its own, and has a practice high school under its own control. Its heads of departments are men or women having in most cases the higher degree of M.A., and in some the doctorate. At Hamilton, instead of the college possessing and controlling the practice school, it is the practice school which virtually possesses and controls the training college. The one member of the staff who is independent of the school is the principal; the rest are merely members of the school staff taking duty for one hour a week each in the training college, and the principal of the school is the vice-principal of the training college. Such an arrangement

inevitably subordinates the college to the school. Each teacher works for about 24 hours a week, and only one of these hours is given to the college. It is not, as the vice-principal naively informed me, "our policy to put our teachers into the college more than is absolutely necessary." Nor is the staff, admirable as it no doubt is for secondary school work, of quite the same standing as a college organised like that of Ypsilanti can secure.

This deficiency in training colleges is aggravated by an entire absence in the Canadian universities of any faculty of education. It is difficult to exaggerate the inspiring influence on the teaching profession in the States which is exercised by the various university education departments, directed by such men as Russell, of Columbia; Hanus, of Harvard; Whitney, of Michigan; and Dewey, of Chicago. This inspiration the Canadian schools lack; there is no chair of education in the universities of Toronto, McGill, or Queen's. In the organisation of the other normal colleges this mistake has not been committed of making them appendages to a practice school, but neither in equipment nor in completeness of course can they be placed on a level with the corresponding institutions in the States. In comparing them with England it must, at the same time, be borne in mind that every training college student in Canada has spent at least three years in a secondary school.

The Relation of Education to Industrial and National Progress.

On the whole, the general opinion, both amongst teachers and industrial leaders, seems to be that education is not the prime cause of the remarkable progress of the last 30 years, but a powerful contributory cause, and the essential condition of its maintenance. Americans are keenly alive, as one head-master put it, to the danger of foreign industrial competition, and are convinced that it is vitally important to raise the general level of intelligence. The pioneer spirit developed in the struggle with savage man and savage nature was the moving force—education is its most powerful instrument. A prominent speaker at the dinner of welcome given to the Commission in New York expressed it in this way: "The industries have been developed by men of business genius, who have only had elementary school training, but college-trained men have been their diamond drills." President Murray Butler points out—"Where the public school term in the United States is longest, there the average productive capacity of the citizen is greatest." President Eliot, of Harvard, in a speech at Boston, thought the influence of the educational system on national vigour and enterprise was rather indirect; that those qualities sprang from the original Puritan spirit of social and religious freedom, and the mobility of society which resulted from them.

President Angell, of Michigan University, a former Ambassador at Constantinople, whose name is a synonym for knowledge of the world and shrewd common-sense, maintains, on the other hand, that education has had an enormous effect. The great growth of industrial prosperity, he pointed out, had been in the last 30 years, and the great growth of schools and universities had been in the same period. The raising of the level of intelligence had greatly advanced both the efficiency of the worker and the adaptability of the individual citizen on which the mobility of society ultimately depends. The statistics, both from the schools and the universities, point in the same direction. Both the manual training

high schools and the university technical departments and institutes of technology which I have visited are unable to supply the demand of the great industrial firms for trained workers, superintendents, and managers; *e.g.*, at the Wisconsin University the engineering department reports that every graduate it turns out has his choice of three or four professional posts. This is fully borne out by the present practice of employers of labour. Their attitude seems, however, to have undergone a complete change in recent years. Fifteen years ago, as the Principal of the Pratt Institute told me, the employers did not believe in technical education. Mr. Hanna, the head of the Atlas Engine Works, Indianapolis, stated that the former prejudice against technical training as unpractical had entirely disappeared. His firm *did not now accept even a messenger boy unless he had been through the high school*, as they did not wish to take anybody who could not be promoted. "Education," he said, "tones up all our mechanical people. The American schools are absolutely essential to the growth of the nation." Mr. Hanna is also a trustee of the great coloured school at Tuskegee. He made a shrewd remark which has direct practical bearing on our own agricultural problem, "You won't keep the American boy on the farm unless you make farming scientifically interesting." The Baldwin Locomotive Co., Philadelphia, have three classes of apprentices, whose salaries are proportioned to the education they have received—elementary, high school, and college respectively.

The most remarkable instance, however, which came under my notice was at Montreal. The firms abovementioned were taking advantage of educational institutions already in existence. In Montreal, the Canadian Pacific and Grand Trunk Railway Companies, with the co-operation of a few less important lines, are establishing a department of railway engineering at their own cost in the McGill University, with the express object of enabling them to open up more rapidly the great North-Western Territories of Canada. Sir Thomas Shaughnessy, the manager of the C.P.R., with whom I had an interview, is not a university man himself, has been in railway work all his life, and has had experience of all kinds of men. A few years ago he doubted the value of college training, but now he is convinced of it; the training must, however, be *of the right sort*, that is, a combination of a college technical course with actual work on the line during the vacation. A man of the old type, he pointed out, would do as well under normal conditions, but could not adapt himself to change, nor devise new methods. He summed up his opinion of the situation as follows: "In ideal railway management every office on the line requiring effective brain work should be filled by a college graduate. All the great bridge builders now," he added, "are college graduates." The same change is observable in commercial business. At Boston I heard of the head of a woollen firm who a few years ago would not allow his son to go to college, but now would take no men for the higher posts in his business but college graduates. Wisconsin University also reports the growing demand for college men as business agents. The reasons given were:—

1. That the college training was now more practical.
2. That business managers who have mixed with other men at the university have a great advantage over others in pushing and extending the influence of their firms, particularly in finance.

I have spoken to men of all classes and occupations, and found natural differences of opinion as to the best kind of education, but I have never met a single man who did not think education was of vital importance to the national progress, both industrial and social. The words of President Angell expressed in conversation to myself—"The passion for education is by far the dominant passion amongst Americans of the West and Middle West," and those of President Murray Butler, printed in his Introduction to "Education in the United States"—"The conviction that education is fundamental to democratic civilisation is perhaps the most widespread among the American people," are confirmed by my own experience as being literally true. The attitude of the most thoughtful Americans is perhaps best summed up in the pregnant phrase of President Roosevelt addressed to the Commission—"Education will not save a nation, but no nation can be saved without education."

H. R. REICHEL.

Mosely Educational Commission.

Report of Professor RHYS.

By way of introduction to the following remarks, I wish to state as briefly as possible what one may call my personal equation: The first day school which I attended consisted mostly of big boys and big girls, taught promiscuously by one man in the empty parlour of a farmer's house during the winter months; later I became a pupil-teacher in a similarly mixed school, and then successively a normal student and a country schoolmaster. I left that employment in order to study at Oxford and in Germany. In the latter country my stay was briefer than I had intended owing to my being appointed a Government Inspector of Schools. So I took a part in administering for five years the sterile code of Robert Lowe, then I was elected to the newly established Chair of Celtic at Oxford. Since that time I have, besides maintaining intimate relations with education in Wales, served on five Government Commissions, of which two were educational. One of the latter, to inquire into Irish university education, only issued its report the other day. The other, presided over by the late Lord Aberdare, began its work of inquiring into the state of education in Wales so far back as the year 1880, and to its influence may be largely ascribed the establishment of the University of Wales, and of a system of secondary education which has become the envy of the advocates of secondary schools in England. For the last 30 years I had heard so much talk of education, about it and ever about it, that my interest in education itself was becoming jaded, like a cook's appetite spoiled by the odours of his kitchen. This was my state of mind when I was pleasantly roused by Mr. Mosely's unexpected invitation, and to him I tender my first and most cordial thanks for the immense treat which our tour in the United States has been to me. My thanks are also due to my fellow Commissioners for having put up with me, and, above all, to the American people for not having quite undone us all with their hearty hospitality and the warmth of their homes.

Throughout our tour nothing impressed me more than the earnestness with which the citizens of the great Republic, of every description, have taken to education. Not only is it the conviction of all the more thoughtful men and women in the States that the people having all the power of the State in their hands must be educated in order to secure and preserve political and social stability, but a belief in the necessity for education so pervades all the masses that the evening schools are crowded in all the large towns. This wholesome contagion spreads even to the motley crowds of immigrants who arrive every week from the Old World; no sooner do they find some sort of a home and something to do than they call on the heads of the public day schools to arrange for the education of their children, and for their own attendance in the evening. I have heard of instances of the parents having called on the school teacher before they had even laid down their packs or

found lodgings for their families. To this they were doubtless prompted by communications from their relatives and friends already settled in the New World; they had been prepared beforehand for a new order of things, among which the desirability, doubtless, of mastering the English language loomed large in their minds.

Another aspect of this educational earnestness may be contemplated from the point of view of the public expenditure on school buildings and educational equipment generally, by communities voluntarily submitting to be taxed for the purpose, and by the princely gifts of public-spirited individuals, both men and women. The figures usually reach so many hundreds of thousands of dollars, and very frequently millions, that one grows dizzy in the contemplation of the totals of American benefactions even when one has reduced them to pounds sterling. One of the results which stare you in the face wherever you go is the fact that the school buildings form one of the most notable features of the architecture of American cities. I have not attempted to make a list of such cases, as I found it too much the rule to be described in detail; but I may mention that at Pittsburg one of the stateliest buildings in the whole place is what we should describe in the United Kingdom as a public elementary school. It is such and so stands, that, taken merely as a building, it would have done credit to Oxford or Edinburgh; but it is only one among many fine school buildings with which Pittsburg and its immediate surroundings are dotted, not to mention such other buildings there as that of the Carnegie library and art galleries, on which, as I was told, some five million more dollars are about to be spent. Pittsburg lies enveloped in the smoke of its great steel works, and reminds me of the appearance presented years ago by Merthyr Tydfil and Dowlais in Glamorganshire. But what had the two or three families that had made colossal fortunes there left behind them in the shape of public buildings? To their everlasting shame the echo from the scarred meadows and disfigured hills dolefully replies, "Only rubbish heaps—heaps—heaps!" As a comment on such a state of things one may read the portions in point of the evidence taken some years ago at Merthyr by Lord Balfour of Burleigh's Commission on Sunday closing in Wales, and scan what it has to say on the subject of drink and intemperance in that neighbourhood.

So much as to what is visible in the case of American school buildings to the passer-by; but the equipment of the institutions in those buildings is on a corresponding scale of completeness, with which ours, whether public or private, cannot with few exceptions stand comparison. It affords a rough and ready estimate of the interest which men feel in any concern if we are told to what depth they are ready to feel for it in their pockets, and, measured by that intelligible standard, the interest taken by the citizens of the Republic in their educational institutions vastly transcends anything known in England at the present day. For I should be sorry to suggest that the great Englishmen of ages gone by had been as sterile in the matter of educational help as the bulk of wealthy Englishmen in recent times. Witness the great benefactions out of which have grown the colleges and the university of Oxford, where it now seems impossible to find a benefactor willing to put down the modest sum of £50,000 for the building and equipment of a physical laboratory, though we have ready to hand an excellent site,

a young professor full of energy, and, what is more, pupils for that professor to teach. It has not always been so, as testified by the names of Wolsey, Bodley, Radcliffe, and a galaxy of others too numerous to mention. At the present day our successful man is perhaps too much bent on founding a family to bequeath his wealth to education: he leaves to his eldest son the land into which he has taken pains to convert his pile of money, but in the matter of his intellectual balance the son very possibly starts with a miserably overdrawn account, owing to the reserve fund of mind and virility having been used up in the process of making the material fortune of the family. Thus the old law of primogeniture with the family traditions inseparable from it comes in to aggravate personal vanity in a way hardly calculated to serve the interests of the race. The successful American, with more rational hopes and complete belief in the maxim that "Providence helps those that help themselves," is confident that his children, having had education, will, if there is anything in them, get on in the world; but for the perpetuation of his name he prefers to rely on institutions which he founds or aids for the benefit of his people. Even from the low standpoint of personal vanity he proves himself the shrewder man: he secures for his name such immortality as he covets, if not the natural term of the nation's lease of life, at any rate that of the city or the State to which he belongs. The grand exception of Cecil Rhodes and that of one or two lesser benefactors only help to prove what may be considered the rule as to Oxford at the present day.

Perhaps in a democratic society it is more natural for an individual to take pride in doing more than his share, that is, more than the average of the individuals forming the community rated or the state taxed, whereas we have inherited a way of thinking (not yet forgotten) that the individual and the Government, or any legally constituted authority acting for the Government, have so little in common that what the one does the other need not be interested in, that is, if the one graciously abstains from trying to thwart the other. This state of things is passing away, it is to be hoped, even in Ireland, but in the States you set out from the people, and whether you take the people in the aggregate or as individuals, everything is done by the people for the people, and that seems to take place without creating an unpleasant feeling of being patronised by the individual citizen who is disposed to do more than the average for the advancement of all, whether in education or industry and material progress generally. It is impossible, on the other hand, to exaggerate the evil done in our country by the feeling that education is a boon graciously bestowed on us by our well-meaning grandmother, the Government, or else a something doled out to us by our betters, the squire and the parson, who condescend to do for us what is best for our welfare. That is a very different thing from our doing it ourselves, however badly we might blunder, and it is to be hoped that this lesson will, among other things, be effectually inculcated by the way in which the last Education Act lays the responsibility for public education on the County Councils of England and Wales. To whatever criticism that Act is open, the direct responsibility for the education of the people is placed on the people themselves acting through their representatives on the County Councils; but it becomes more important than ever that the burden of that responsibility should be adequately realised here as it seems to be in the United States.

To me one of the most curious and touching sights was to watch the burly American policeman, armed with his baton devised to defy riotous crowds, doing gentle duty morning and afternoon as the protector of the infant citizens trying to cross the terrible streets of their native towns on their way to and from school. Shakespeare alludes to the English schoolboy creeping like snail unwillingly to school, and the American child would seem to leave him far behind, for I fancy one hears less about truants in his country than in England, though they are by no means unknown there likewise or confined to the rougher sex. I remember hearing at one of the schools of two girls who had quietly slipped away to enjoy themselves for the day eating chocolates. But on the whole the American child is distinctly fond of going to school, and the explanation is partly the following: it is the place where he expects to meet his playmates, and there he is given nice rooms in which he may hold his meetings in imitation of men and women of a maturer age. Altogether, he is treated more as an adult than is usual with us; he regards school to some extent as the grown-up man regards his club, and there he transacts a good deal of what he regards as business. Along with this may also be mentioned the fact that the gulf between the teacher and the pupil is usually much narrower there, if it exists at all. This is to be noticed throughout from the kindergarten up to the college and the university. In the younger classes the intimacy between teacher and taught is facilitated by the circumstance that the teacher is usually a woman, whose better understanding of infant life and readier sympathy with its troubles tend to render the relation between them closer and friendlier than where the teacher belongs to the other sex. However, I have not been able to detect that the distance is any greater between teacher and pupil in the higher classes of secondary schools; and as for college, there it becomes merged readily into the *seminar* method of teaching. In one case which I have in my mind, the professor was a man well-known both in America and Europe as one of the foremost representatives of the department of philosophy, which he has made his own. On the occasion to which I refer he conducted himself not so much as a professor teaching his pupils in any direct way as a *primus inter pares* directing a subtle discussion in which the members of his class took part by asking questions, criticising the views of their fellows, and otherwise expressing themselves with the utmost freedom. This I felt to be in part at least the working out of the democratic axiom that "one man is as good as another," and my enjoyment of the half-hour I spent in that class would have been perfect had not the subtleness of some of the questions asked kept prompting my Celtic mind on the lines of a well-known story regardless of logic, to add to that axiom just the words "and better, too." Needless to say, the method here in question is not relied on alone, but allowed to alternate with more formal teaching. It is excellent and thoroughly to be recommended.

From this subject of the close relation between the teacher and the taught, I proceed to mention a feature of some schools in which the pupils to a large extent discipline themselves under leaders or captains of their own, and the teachers have next to nothing to do by way of checking noise or rowdiness. This state of self-acting discipline seems to be secured by appealing to the better nature of the pupils, and by inculcating in them early ideas as to the

duties of good citizens : they are taught how the reputation of the State depends on the behaviour of its individual citizens, and they are encouraged to work that out in their conduct in the miniature city which they regard themselves as forming. They naturally look at the whole as culminating in what is to them the ideal Republic, a state of mind aptly illustrated by a little story told us on the way out. It is to the effect that a mother having occasion to flog her little boy, he cried bitterly ; but as soon as he was able to recover the use of articulate speech he assured her that he was not crying on account of the pain, but because of the shame and insult which she had heaped on a free and independent citizen of the United States. The sentiment *Civis Romanus sum* blossoms early in the States, and is ready to the teacher's hand at an age when our little barbarians give no sign of the awakening of corresponding possibilities, and I fear that this kind of treatment would only make of our children some young bullies and a host of little prigs. It is right, however, to say that I did not discover evidence of any such a result in the American schools in point. All that I noticed was that the American child is inclined to adopt the phraseology of adults, and to be what we should term old-fashioned in his ways, as is observed with us in the case of an infant that always associates with grown-up men and women from the lack of opportunity to play with friends of his own age. Perhaps one might say generally that the American child is comparatively assured and self-confident, not to say perky, when a British child is as yet the victim of shyness, or else behaves like the little savage that he is. Possibly the American child develops quicker than his British cousin, but whether he attains also to full maturity of mind earlier I cannot say : at all events, we seem to have here to do with one of the results of climatic influences rather than any deeper difference of race. Whatever it may be, there is nothing to show that one would be acting wisely in dealing with American and British children quite in one and the same way.

In connection with the incipient citizenship to which I have alluded, it is hardly necessary to add that no opportunity is missed of displaying the American flag, which is very much *en evidence* when the public schools assemble in the morning. This is in sharp contrast to our case, which I have heard briefly described to the effect that in England our educationists never think of the flag, while those who do, never think of education. The more sane attitude would be one approaching that of the Americans, but avoiding every extreme of the nature of jingoism. With an Empire so scattered as the British one it is all the more important that unity of purpose, unity of interests, and unity of ideals should be taught the young without, however, effacing the characteristic features which give the Anglo-Celtic peoples of the British Isles their respective individuality and perhaps a good deal more.

Before leaving the question of discipline I may mention that in some American schools the teacher has no legal right to inflict corporal punishment on his pupils under any circumstances whatsoever ; but that is not found to work satisfactorily, and there is an agitation among the schoolmasters to have the power given them of inflicting such chastisement. As a matter of fact, corporal punishment appears to be comparatively little resorted to, even where it is permitted, in American schools ; but it is argued that it makes a

considerable difference to the teacher if he has not the right to inflict it. In the case of persistent bad behaviour on the part of a scholar, the usual course is to send him home and to prevent him from joining his classes till the parents have called and promised to do their part in inducing their child to behave properly. The threat to exclude him permanently from his classes proves as a rule effective, the parents being duly impressed by the gravity of such a step and what it would mean with regard to their child's future. In a country where the parents are frequently indifferent as to their children's equipment in the matter of education, or are slaves to habits of intemperance, as happens often enough in England, this would hardly work. So here emerges again the importance of educating the parents to realise the heavy responsibility they incur in allowing their offspring to grow up in ignorance and heavily handicapped in the race of life.

In many of his doings the American is inclined to hurry: he is in a hurry to enter on the business of his life, and he is in a hurry to make his fortune, but I have noticed no signs of undue hurry in the schoolroom. There the teacher is in no hurry to have done with his class: he seems to set himself to do his work with deliberation. He has the leisure to give his pupils the best teaching of which he is capable; he is not prevented from doing so by any pressure like that exercised in England by the ever-growing dimensions of our cramming system, which, like an octopus, threatens to strangle in its ubiquitous coils all that deserves to be called education. So far this most serious evil has been successfully resisted in the States. The moment you establish scholarships and prizes, to be awarded on the bare results of competitive examinations, the way is open for cramming and all its concomitant evils, among which may be mentioned this: the machinery of the school is directed to turning out one or two prize pupils who, by their success, are to advertise the school that has produced them. This process means more or less neglect of the rank and file, not to mention the discouragement which it must be to the ordinary boy, for, however meritorious his work may be, he knows that the distinctions concerning which he hears so much are not for "the likes of him." The case is even worse if the school has to prepare for a variety of examinations at the same time, for the teaching becomes dislocated and its general efficiency lost sight of in a multiplicity of minor issues determined by the special demands of individual pupils, who in their several ways are expected to advertise the school. The same remarks apply to a certain extent to our university colleges. The late Walter Pater used to tell me that the only men he cared to teach at Oxford were the passmen; for the undergraduates reading for honours had no time for education and the improvement of their minds, but had to be crammed in order to yield the sort of mental *pâté de foie gras* which the examiner demands at a certain season determined by the university. But hitherto American educationists have jealously and successfully preserved their liberty of action and of doing the best they can for each school or college as a whole; and this has been facilitated by the fact that from the infant school up to the closing year of the secondary school there is no fee payable by the pupil for either tuition or books, an exemption carried to the colleges in the State universities of the West. When, however, a boy or girl wishes to leave the secondary school for a college where a tuition fee has to be

paid, it may be necessary that the candidate should have pecuniary aid beyond the means of the parents, and it may be that the college has a certain number of scholarships to give away. It can give them away by examination if it chooses, or else on the school record of the candidates, or partly on the one and partly on the other. In any case the inducement to cram the pupils is kept down, and the leading educationists of the States keep a sharp look out in the direction I have indicated, as they see what the evils of the cramming system would be and how it would inevitably stifle their liberty of teaching as it is doing in England more and more. For the States the problem is to keep out cram, and for us in England the much harder one of lopping off the hydra's heads and so reducing its dimensions as to make it innocuous. It is beyond doubt one of the greatest difficulties which our grammar schools and our colleges have to face. In the States the democratic and all-pervading atmosphere is not likely to prove favourable to the secondary schools becoming machines for the production of a few prize scholars rather than aiming at a high level for all.

Here may be mentioned the fact that the schools of the United States are very little influenced by considerations of social status. In a wealthy quarter of an American city the children are, as a matter of course, those of comparatively well-to-do and educated parents, but no distinction is recognised. That is a wholesome state of things which one has often heard of as prevailing in the old-fashioned schools that have made the fortune of Scotland. Here, again, England with its pernicious legacies from the feudal system, together with its plague of castes and cliques, is disposed to lag behind, though some progress has been made. This is more especially to be noticed in the case of our high schools for girls, which are now attended in some English towns, such as Oxford, by the daughters of tradesmen and shopkeepers, as well as by those of professional men and university professors. With regard to boys' schools, the case is rendered somewhat different by the existence of the old grammar schools and the great public schools of England, on all of which the democratic idea has for some time been making some impression. Moreover, if the secondary schools to which the country is looking forward are to be a success, the English people will have to back them with one accord, regardless of invidious class distinctions, just as the citizens of the Republic do with theirs.

Besides the public schools, elementary and secondary, there are private schools in the States, but I do not happen to have found any evidence that they are on the increase, either in point of attendance or of importance, but rather the contrary. Whether the growth of wealth promotes the growth of what some would call snobbism I cannot tell, but so far as regards the schools in question they seem to yield no evidence for any such an inference. But intermediate between private schools and the public ones come, educationally speaking, the parochial or Catholic schools, which, like the private schools, receive no direct help from the State. They seem fully to maintain their ground, and those of them which I have seen appear to be very efficiently managed. Now should the Catholic portion of the population of the States find itself one day, whether owing to proselytism or to race productiveness, or to both, a preponderant element there would be the possibility, it would seem to me, of a religious question of the greatest gravity. I have, however, found no layman who will admit this: the thought

that the State should contribute towards the maintenance of what we should call a denominational school seems to the rank and file of Americans so preposterous that they can hardly be induced to discuss the point. Nay, in the States Catholic laymen are absolutely at one with the Protestants with regard to it; and so far the hierarchy of the Catholic Church have not combined to assume there anything like the non-possumous attitude in which the prelates of the same religion in Ireland have persisted with deterrent effectiveness in the case of the Queen's Colleges. More might be said on this subject, but I will merely emphasise the contrast between the peace reigning in America as regards religious education and the deplorable differences which prevail in this country so greatly to the prejudice of the hopes which some of us build on our schools.

As the object of these remarks is mostly to call attention to such features of American education as seem deserving of being imitated in the Old Country, I have not thought it necessary to describe the whole system or to criticise in detail any defects that may have been noticed by me; for these latter purposes generally let it suffice to refer the reader to Mr. Sadler's "Special Reports on Educational Subjects," Vol. X., part 1, Vol. XI., part 2, published by the Board of Education, and the two volumes on "Education in the United States," edited by President Nicholas Murray Butler, and consisting of monographs prepared for the United States exhibit at the Paris Exhibition of 1900; also the various writings of Dr. W. T. Harris, United States Commissioner of Education, whom we visited at the Bureau of Education at Washington, D.C. He is not only ready with all kinds of information and statistics, but withal one of the most thoughtful and suggestive critics of the system of education in America. One may, however, be told that there is no such system, and for that view a good deal might doubtless have been said some years ago; but it is no longer so. Public education in the States has already shaped itself into a system, and that system is rapidly taking a very well-defined form. No other country in the world offers such a vast field for educational fads, and there are some to be found there; but I have been surprised to come across so few. In order to judge of the efficiency of the teaching in the schools, whether public (elementary) or secondary (high), I made it, wherever I found the opportunity, my practice to sit through the lesson, or recitation as they call it there, and watch the progress of the most humdrum part of the work. But I may explain that I gave the preference to classes engaged on some language or literature, especially Latin and Greek, French and German, English and English literature, and, as the next choice, to arithmetic, algebra, and geometry. To be brief, I found the average of the teaching good, and some of it I should call excellent. As I have already remarked, I was greatly impressed by the deliberate manner in which it was carried on with nothing to hamper the teacher in his work or incite him to undue hurry. So I am convinced that what American education has already achieved is but a very inadequate earnest of what it is going to do. The machinery is there in perfect order, and, if I am not greatly mistaken, more and more thoroughness will be secured in the working of it, and the crudeness occasionally to be detected will be eliminated. An American who understands the character of his countrymen well places to the credit of that character alertness and

adaptability, and against it a lack of thoroughness; but that lack must be a far greater and deeper one than I take it to be if American educationists do not succeed in making an impression on it by improvements in the direction which I have indicated, and that in the immediate future. At any rate, nothing that can be done will be left undone by the shrewd and thoughtful men who may be said to direct the working of the system. Besides Commissioner Harris and President Murray Butler, one need only mention, among many others, such men as President Eliot, of Harvard, President Harper, of the University of Chicago, Professor Andrew F. West, of Princeton, and Professor Perry, of Columbia University.

To pursue the subject of the schools, it is necessary to distinguish between them in their relation on the one hand to commerce and industry, and to the professions and the colleges on the other. The discussion of them under the former head I must, for lack of competence, leave to other members of the Commission, but I may mention that I have often asked Americans how far American progress in commerce and the industrial arts is due to American education, and I have found that the most thoughtful hesitate to trace it to their system of education. They prefer to regard both their industrial progress and their system of education as equally the outcome of qualities inherited from their pioneer ancestors, among others the adaptability and alertness to which I have already referred. "The men," said Dr. James, President of the Northwestern University,* "who have made this country and are making the great things we see about us to-day, could not be the product of this system simply because it did not exist at the time when they received their training." But Americans, one and all, are of opinion that to maintain the state of industrial and commercial eminence which they have reached, it is impossible to give too much attention to the education of the young of every class in the community. The general belief was well expressed by President Roosevelt when he did Mr. Mosely and his Commissioners the honour of receiving us—"Education is not everything," he said, "in the prosperity of the Republic, but to neglect education would be the ruin of the Republic." This is a lesson which Scotsmen have long ago learnt, and there is no difficulty in teaching it to the Celts of either Britain or Ireland, but there is a type of Englishman, the undiluted Saxon, who cannot realise it, or form a correct idea of the nature of the modern competition for the trade of the world: so he consoles himself with the old-fashioned maxim that trade will always follow the British flag, and he fails to recognise that the flag, to be so followed, must in the future be the symbol, not merely or mainly of brute force, but of brain power.

A word now concerning the schools as showing the way to the colleges and the universities. It is needless to say how few of the children in the public schools of America reach the secondary schools, for besides the failures dropped on the way, so to say, the majority go off to manual labour or to other occupations of different kinds. Nevertheless, the way upwards is always open, not only to the secondary schools but also from them to the colleges. Now the public schools that send a number of their pupils in due

* In a speech made by him at a banquet given to Mr. Mosely and his Commission at the Auditorium Hotel, Chicago, November 7th, 1903.



PUBLIC SCHOOL JUNIOR CLASS (TEACHING PRACTICAL GARDENING).



course to the secondary schools are thereby kept in touch with them. In their turn, the secondary schools are influenced and moulded, one may say, by the colleges and universities, to which a contingent of their pupils look forward for admission at the end of their school career. The influence of the colleges on the secondary schools is exercised both directly and indirectly, admission to the colleges being sometimes by examinations held by the colleges themselves, and sometimes regulated by the pupil's record at school. In the latter case, the college must have confidence in the school, and the school has to maintain its character for efficiency in order to continue that confidence. It is becoming the practice for the academical body or college to depute some of its professors from time to time to visit the school and inspect its working; thus a regular system is established of permitting the school to accredit its pupils to the college with which it has linked itself. In this kind of way such a body as Harvard University connects itself in a very living fashion with a number of accrediting schools; and so it may be said that the directing power resides in the college or academical body above and works down into the secondary schools. Thus the strongest intellects which American universities can supply are placed in a position to mould and regulate the work of the schools in so far as those schools look up to the colleges and universities as the goal of the educational career of their pupils.

Perhaps I ought to touch in passing on the subject of the co-education of the sexes, though I have no original contribution to make to the discussion. As a Welshman I have been acquainted with co-education from the days of my childhood upwards, and the University of Wales recognises it to the fullest extent. It is right, however, to say that the constituent colleges of that university have now and then had trouble from the presence of young men and young women in the same classes, but never anything so serious as the newspapers would lead one to imagine. On the whole I am inclined to regard co-education as offering young men and young women useful opportunities of sounding one another's character and temper: the comparatively few premature engagements to which it may lead are, I imagine, far more than counter-balanced by the number of unwise marriages which it prevents. At any rate, the prevailing sense of America seems to favour it, especially in the Central and Western States. But I am at a loss what to say of the extremes to which the discipline which co-education implies is sometimes believed to be carried. To explain what I mean, I may mention that the principal of a very important high school in one of the large towns of America assured me with no little satisfaction that in the whole of that school no youth ever looks at a girl because she is a girl. I had not the courage to ask him if he really thought that quite desirable. When studying in Germany more years ago than I care to remember I picked up the rhyme—

"Wer nicht liebt Wein, Weib und Gesang,
Der bleibt ein Narr sein Leben lang";

and I am inclined to accept the two latter thirds of that creed, which German students sing as the sentiment of no less an authority than Martin Luther. How the discipline in question would, if it became general and extended itself to all the colleges, affect the continuity of the existence of the people of the United

States, I cannot say. But the question must always be a complicated one, and, as things are, it is rendered all the less urgent by the rate at which Europe keeps pouring her surplus crowds into the territory of the Republic. It has, perhaps, another and a subtler aspect: how far those successfully subjected to the discipline instanced would have been thereby handicapped for any effort to excel in the fine arts, where the passion of love is supposed to count? Even though you interfered with nature only so far as to put respect, the sincerest respect imaginable, into the place of love, the believers in the dictum "*Cherchez la femme*" would still argue that you had done harm—perhaps more harm than good. Would they be wrong?

Here I wish to touch in passing on a somewhat kindred subject, namely, that of the predominance of women as school teachers in America. It is universally admitted that this works excellently in the younger classes, and women might perhaps be more largely employed in the same way in England; but when we come to classes containing older boys the wisdom of having them entirely educated by women is beginning to be questioned in America, and sooner or later this state of things will, doubtless, be modified. At present it is tolerated partly for reasons of economy: women teachers work for less pay than men, so they hold possession of nearly the whole field. This is the only serious kind of parsimony which I have noticed in connection with the management of American schools.

Thus far my remarks have had to do mainly with the schools as distinguished from the college, which is, roughly speaking, similar to the colleges of an English university. The college as it exists in America has been described by one who knows it well, Professor West, of Princeton University, as "the place of central importance in the historic outworking of American higher education," and it remains to-day, he says, "the one repository and shelter of liberal education as distinguished from technical or commercial training, the only available foundation for the erection of universities containing faculties devoted to the maintenance of pure learning, and the only institution which can furnish the preparation which is always desired, even though it is not yet generally exacted, by the better professional schools." The course at an American college leads to a bachelor's degree and extends regularly over four years, but owing to an increase in the age of entrance and other reasons it is sometimes cut down to three: in the case of the older and stronger colleges Professor West mentions the average age of entrance as 18½. On the other hand, it would be well for us in connection with our technical schools to ponder over the following words of the same authority: "There is a noticeable tendency, growing stronger each year," he says, "to draw a sharp line between liberal and technical education, and to retain undergraduate college education in liberal studies as the best foundation for technical studies, thus elevating the latter to a professional dignity comparable with law, medicine and divinity." Lastly, he believes that the true American is to be found in the Republic's college halls, and he writes as follows: "Scarcely one in a hundred of our white male youth of college age has gone to college. But this scanty contingent has furnished one-half of all the presidents of the United States, most of the justices of the supreme court, not far from one-half of the cabinet and of the national senate, and

almost a third of the house of representatives. No other single class of equal numbers has been so potent in our national life."* What a slight modification would make those words applicable to the colleges of our older universities and the great leaders of thought educated in them!

Next to the colleges and above them come the universities, as to which one has to say that, though there is a multitude of institutions which call themselves universities, only a few of them need be treated as such—namely, the well-known universities of the Atlantic States and the neighbouring ones, to which must be added the universities of the Centre and the West, which are of a more purely American growth, and are mainly supported by their respective States. All these are real universities, and the importance of most of them is growing every day. Besides them, however, as already hinted, the States are dotted with other institutions calling themselves universities, some of which never were or attempted to be universities in any proper sense of the word, while others have settled down to honest college work. "Among the scores of titular universities," says Professor Perry, of Columbia University, "in this country most are merely colleges, some good, some indifferent, some so badly endowed and organised as to be not even good high schools."† Most of those of this class are practically unknown to the world of letters; but in England, oftener perhaps in Wales, one is reminded of the existence of some of their number by the occasional fact that a minister who has made a preaching tour in the States comes home triumphantly dubbed D.D. and exhibits himself resplendent in robes of many colours. But the mighty growth of higher education in the States may be said to have steadily shed such institutions as mere excrescences, just as American Christianity is destined to rid itself of religious eccentricities from Mormonism down to the ravings of the last prophet to rise and draw away much people after him.

In America it is hardly ever possible to separate the university proper from the college, and Professor Perry writes as follows on this point: "There are still but two institutions which may be called even fragmentary universities entirely unconnected with a college: the Clark University of Worcester, Mass., and the Catholic University of America at Washington. Down to 1876, when the Johns Hopkins University was opened, whatever real university instruction was offered was organised at a college already existing, and even the founders of the Johns Hopkins, though their chief purpose was avowedly to provide for university instruction of the highest grade, felt it necessary or at least advisable to organise a college also."‡ But it is research that he regards as the mark of an American university, and from Harvard to the Golden Gate on the Pacific, from Minneapolis to New Orleans, he treats as universities the "many institutions which offer training in the methods of scientific research, opportunities for the prosecution of such research, and abundant facilities in the way of libraries, museums and laboratories, to those individuals who have had such

* See Professor West's paper on "The American College," in President Murray Butler's "Series of Monographs," Vol. I., pp. 209, 212, 215, 238, *et passim*.

† Murray Butler's "Series of Monographs," I. 254; see also the like opinion quoted by Professor West at p. 239 of the same volume.

‡ *Ibid.*, p. 255.

preliminary training as to be able to profit fully by these advantages, and which certify by the formal bestowal of a particular degree or degrees that the individual receiving one of them has proved himself or herself to have acquired the methods and habits of such scientific research." In other words, these would be described in the technical language of the States as institutions which "offer to graduate students courses leading to advanced or higher degrees." "Where such courses," he goes on to say, "are well organised and equipped and successfully maintained, there is a university at least in part, and, it may be, in the whole." Whether the institution do only this, or this and many other things besides, and whether it be called university or college, may be important questions from some points of view,* but for the purpose of these remarks I accept the existence of such organisation for research work by graduates as the test of an American university, and by means of that test you sweep out of consideration the greater number of titular universities in America, which one may regard as separable accidents of the superabundant energy attending the giant growth of a young nation that as yet hardly knows her own mind and fully realises no limitations.

So I return to the smaller number, the universities properly so called, but not in order to sit in judgment on them. Suffice it to say, that their professors are known to form a class of men second, probably, as scholars and researchers to no similar body in the Old World. As regards some of the departments under their charge, I have the following points to mention, beginning with Greek, as to which I have not directly heard of any remarkable increase in the numbers of the students who take up that department of study. But even a decrease would not necessarily mean a falling off in real Greek scholarship, merely a diminution in the number of those acquiring a smattering of the language. There is probably a better time coming for Greek, for when the rush to become rich has somewhat abated, and when many more fortunes have been made, there will be a larger class, probably, of cultured families who can afford to let their children learn to enjoy the masterpieces of the literature of ancient Greece, and study at first hand the influence of Hellas on civilisation throughout the Aryan world. As to the teaching in this department, I noticed that Greek words were always pronounced with a stress on the syllable indicated by the grammarians, and not simply accented according to the laws of the accent in Latin, as is done in England, though there is no more reason for so doing than for teaching children to read French according to English orthography, itself an exhibition of folly by no means unknown in this country, but hardly likely to be advocated by any man in his senses at the present day. How long is ancient Greek to be treated in that way among us, and the acquisition of conversational facility in modern Greek rendered impossible to a classical scholar if he happens to be an Englishman taught in his own country? Speaking generally, the fate of Greek scholarship may be said to be in manifold ways bound up with that of Greek art and Greek archaeology. The prospects of the latter, it is needless to say, have perhaps never been better than they are to-day, thanks to the successful use of the spade and the spread of intelligent interest in all that bears on the history of Mediterranean civilisation.

* Ibid., p. 256.

The immediate prospects of Latin in America are much better than those of Greek; among other things may be mentioned a most significant rise of late years in the numbers of the pupils who take Latin in the secondary schools, and the revival of this study extends itself down to the eighth or even the seventh year of the course of instruction in the public (elementary) schools. I take these statements on the authority of Dr. Harris, of the Washington Bureau of Education,* who proceeds to give reasons why Englishmen and Americans think it necessary to have Latin taught in their schools, not only to those who are to go to college, but to numbers of the others who have no intention to go there. One of the reasons which he gives is that "it will be found that whatever is precise and technical in expression, as well as whatever contains fine discriminations of thought or delicate shades of feeling, is expressed in words of Latin origin. Hence," he adds, "the people who speak English have a specific reason for founding their secondary and higher studies of language on the Latin tongue." This is a reason which derives its cogency from the composition of the vocabulary of the English language; but it would take up too much of the space at my disposal to produce and discuss here the more general reasons for continuing the study of Latin in the colleges and the universities. They are well known, and I will only remark in a general way that, while crowds of eager young men hurry to study natural science and to discover more ways of making it remunerative, some will always be found to cherish, at least stealthily, the old-fashioned opinion of Pope, that the proper study of mankind is man, or, at any rate, that man and his ways may deserve some little passing attention. The rush for natural science and mechanics cannot help making the study of the classics, at any rate, more select; but a good many of our scientists are apt to forget that in a wealthy country like England or the United States there may be young men left who have no cold-blooded curiosity to vivisection a frog, and no irrepressible wish to handle tools or even to build a steam engine. A university ought to have room enough for both classes of students without their hustling one another; and for my part I should like to see our schools giving the students of natural science a better training, for instance, in mathematics, the recognised handmaid of physics and chemistry; but they must not endeavour to narrow the schools and universities to their own dimensions. To look at a slightly different aspect of the same question, I notice that there is a tendency on the part of some American institutions to yield to the clamour for earlier specialising, with a view to the student's entering on certain professions a year sooner. Practically that means, however you put it, a year deducted from his time for liberal education; and even if he becomes a successful man in his profession he will hardly feel disposed later in life to bless those who enabled him to slip away to his own department with only a minimum of culture. The elective system, which, as its name intimates, should enable the student to take only the subjects of his choice, seems to make for a similar result; but, as a matter of fact, I have never found any American professor who

* See his letter entitled "A Brief for Latin," printed in the *Educational Review*, New York, April, 1899, but later figures are given by Professor G. G. Ramsay, of Glasgow, in an address on "Efficiency in Education" (James MacLehose, Glasgow, 1902), pp. 17-24, where the professor makes some telling remarks on the significance of the American facts.

could quite explain it to me. So far, however, as I have been able to make it out, its principal virtue for the student is that it gives him great satisfaction in print without really interfering very much with his education. This is due partly to a stipulation that he must choose certain subjects with certain other subjects and in a certain order, and partly to the primordial impossibility of his being in two places at once, either to hear lectures or for any other purpose. So this self-simplifying scheme works out, I am told, almost as innocuously as the choice of schools allowed at Oxford.

Speaking somewhat more generally of the preference of the majority of the students, Professor West traces it to "their instinct for something useful and immediately available, rather than a desire for things intellectual. This constantly militates," he adds, "against devotion to the intellectual value of their modern studies, and tends more and more to drag them towards technical standards." His words regarding the tendency which the technical aspect of the sciences has had to create a growing demand for strictly technological instruction to the exclusion of the theoretical and non-technical aspects are even more explicit: "It is this cause more than any other which has tended to restrict the energies of schools of science to the production of experts in the various mechanical and chemical arts and industries and has caused them to do so little for the advancement of pure science. Conscious of this difficulty, many schools of science," he goes on to say, "have been giving larger place in the curriculum to some of the more available humanistic studies. Fuller courses in French and German have been provided for, and the study of English has been insisted upon with sharper emphasis."* Similar remarks have been made to me in conversation with American educationists, one of whom contrasted what he termed the comparative stagnation in physics and chemistry with the increasing popularity of Latin, which he ascribed partly to the fact that people were beginning to find out the value of that language as a means of culture, and also to the teachers of Latin knowing what to teach and how to present it. Thus from the two sides of the American case one learns a lesson deserving of the special attention of a certain class of advocates of natural science in this country, whose academic ideal would seem to be a university of illiterates. For even if they succeeded in squeezing Greek and Latin out of the curriculum there would be no certainty that the technologies which they might have to admit into the place of the classics would greatly help the advancement of science in the most truly academical sense of that much-abused term.

These remarks, suggested to me by the departments of Greek and Latin, apply, in a measure, also to those of French and German as well as to English and English literature. As regards the teaching of French and German in American schools, I have detected no tendency to scamp the work, as used to be notoriously the case in England. One of the reasons for this in England was doubtless the lack of Englishmen trained at once to teach a modern language not his own and to maintain discipline in his class; the unfortunate foreigners who tried to fill the gap were only too often incapable of doing either the one thing or the other. The lack to which I have alluded is still perceptible in England, while in the States I have

*Ibid., pp. 216, 217.

noticed no preponderance of foreigners engaged in this part of the school work. I must admit, however, that in some instances the niceties of French pronunciation, for example, were sadly to seek; the case of a more rugged language like German could not torture one's ears so acutely. Whether the growing friendship between France and England will make the study of French more common in our country remains to be seen, but certain it is that in some quarters the study of German has been set back by the unfortunate success with which the German name has made itself odious to Englishmen. One of the most effective remedies for the dishonesty with which these languages are still sometimes treated in English schools would be the passing of a brief statute by the universities of Oxford and Cambridge making a minimum knowledge of those two languages obligatory in Responsions. It would soon be discovered how to teach them with as much earnestness of purpose as in the States, and the result would be a boon equally to scholars and to students of natural science, to youths destined for the professions, and to those trained for business alike. It might, in fact, help to make the so-called modern side of English schools the scene of some definite study instead of being, as it only too often is the case, a sort of a castle of indolence to receive a motley crowd of neglected pupils. In American schools I noticed nothing corresponding to the division of an English one into the two sides known as the classical and the modern, a division which practically seems to imply that classical scholars have no need to learn modern languages, and to ignore the fact that the student of Latin is exceptionally well fitted for learning them, especially French, Italian, or Spanish.

In the States a great deal has been made of the study of English, and of English literature, its history and sources. Not only has that produced excellent results but, owing largely to the fruitful labours of the late Professor Child, of Harvard, and the capable men trained by him, it has influenced the study of other literatures, notably those which have helped directly or indirectly to enlarge the scope of authors whose own language was English. Thus it has given a new impulse to the study of French and old French literature, and in some measure also to that of German, owing to the importance of the *matière de Bretagne* and the Arthurian romances in the development of English literature. Nay, the impulse from that quarter extends to Celtic and Celtic literature as supplying in many instances the key to the origin of the romances. The result is marked by the publication of original work in the form of monographs and dissertations on subjects selected from those suggested by French romance or Celtic story. I have made inquiries of the late Professor Child's distinguished pupil and successor at Harvard, Professor Kittredge, and of others occupying similar positions in other American universities, and some of them described to me how men engaged in the teaching profession would return to the university to take the degree of Ph.D., and would choose themes for their dissertations from the store-house of old romance. The selection would be effected with the help of the professor, who would also watch more or less closely over the candidate's study of it and the progress of his work of research generally. The direct object of the candidate is to improve his position as a teacher, let us say, of French or subjects connected with that language; but even when his eye is not exactly directed to French he has distinctly in view

the improvement of his own position, and American feeling in matters of this kind is such that, apart from his love for the line of study he adopts, he will be rewarded by the improvement for which he looks. Disappointment has sometimes of late been expressed in this country at our not having any results to show corresponding to the productions to which I have referred from America, for instance, in a letter from the pen of Mr. Nutt in "The Athenæum" for the 22nd of August last. It is now possible at Oxford, for example, for a man to take in connection with the school of English, or that of modern languages, a degree analogous to the American Ph.D.; but before he elects to offer a dissertation on a Celtic subject he may have every reason to consider whether that would help him in any way to earn a livelihood in the United Kingdom; it would probably not satisfy him to be told that it would help him in the United States, if he has no intention of migrating there. As a matter of experience, I find no great difficulty in bringing together a small class of Welshmen to read the Mabinogion, but it is seldom possible to turn out a Celtic scholar, as no one has the time to study a new subject, such as Irish and Irish literature. My countrymen are usually not blessed with private means, and their energies have, therefore, to be directed to acquiring command of the English tongue, and above all of the classics, of mathematics, or of such other subjects as are likely to help them to earn a livelihood by teaching, preaching, or doing something else. Could Celtic, for instance, be relied on to advance a man's prospects in the British Empire results might be expected in time to follow similar to those which have been pointed out on the other side of the Atlantic. As things are, the American system proves here again the more elastic in practice, and public opinion in the scholastic world of the States is more appreciative of scholarship apart from the precise setting in which it is presented.

It has been to me an object of considerable curiosity to ascertain on the spot what has been in America the fate in recent years of Sanskrit and comparative philology, for I couple them together as a matter of habit dating from my undergraduate days at Oxford in the sixties. The Sanskrit class, I learn, is now, as a rule, small in America, consisting usually of a few men prepared for the light which Sanskrit sheds on the grammatical forms of the kindred tongues, especially those of Latin and Greek. This is also the case in England, where the class may contain an occasional man preparing to work in India, though, owing to the way in which the Indian Civil Service is provided for, this contingent is far from being as considerable as might be expected.

Then, if I may treat of comparative philology by itself, it is a very different matter now from what it was in the days of Bopp, or even of Schleicher: the *Junggrammatiker*, the Brugmanns, the De Saussures, and others have quenched with cold water the fireworks of their predecessors, and lit in their stead the flame of the midnight oil. Comparative philology is no longer the word play that it used to be, but serious hard work, involving the tedious acquisition of knowledge of a considerable number of languages, with some acquaintance with their dialects, especially those of ancient Italy and Greece, and perhaps Gothic and Litu-Slavic. Students at any rate falling short in their acquisition of the former languages and dialects would not as a rule be advised by an American professor to attend lectures on comparative philology any more than they would

in England : so in both countries the class is comparatively small. In England, especially at Oxford, it tends to become smaller owing to the very subordinate place allowed to it in the school of *Literæ Humaniores* : it should be treated as a serious study and recognised as such in our examinations.

As philology when it is comparative brings the study of languages to a focus, so the comparative science of man or anthropology does the same thing with the study of races, only more so. Excellent as is the teaching of anthropology in the States, I can testify to American anthropologists looking up as to the *doyen* of their department to Professor Tylor, of whose services Oxford has had the advantage for many years. But in one matter at least they are ahead of us : I allude to the Smithsonian Institution at Washington, with its unique collection of Indian antiquities, together with everything relating to the Red Man and the history of his race, and more especially to the excellent work done by its Bureau of Ethnology, which has always been the envy of British anthropologists. Greatly as the aborigines within the vast territory of the United States vary one tribe from another, it is inconsiderable as compared with the almost infinite varieties of man within the scattered areas of the British Empire, and yet we have never succeeded in getting anything established corresponding to the Washington Bureau of Ethnology. But it is not for the lack of reminding the Government and the public of the desirability of having such a central institution, with an ethnographic museum, in London. When, for instance, Mr. C. H. Read, of the British Museum, presided over the Anthropological Section of the British Association at its Dover meeting in 1899, this subject very appropriately formed the burden of his address. I am not aware, however, that anything has been done, and we are still, I fear, without any central museum of ethnography to serve as a receptacle for the ample harvest of ethnological data which our vast Empire supplies, or any intelligent means of preserving them for the use of future inquiry. For the matter of that I must not confine it to the future, for I have recently been told with considerable indignation by a Fellow of the Royal Geographical Society that before setting out to travel among the natives of distant portions of our Empire he naturally likes to know something about them, but that in order to get the information desired he has to visit either Washington or Berlin. Not only is such a state of things an obvious disgrace to us, but it may prove a source both of pecuniary loss and of political disaster. At any rate, Mr. Read assures us that "the value of such museums is by no means confined to the scientific inquirer, but they may," he says, "equally be made to serve the purpose of the trader and the public at large." Doubtless he might have added that they are actually made to serve some such a purpose, only not by us but to the prejudice of our interests. Nor is that all, for the better the superstitions, the manners, and customs of our native races are understood by us the more feasible it becomes to avoid political troubles by ruling them wisely, both for their own sake and for the welfare of the Empire as a whole.

We saw in the course of our tour in the States many excellent museums and well-equipped libraries. In the former my attention was attracted by the conspicuous absence of the notice usual at home not to touch the specimens, the antiquities, or whatever else

they may happen to be. While being taken by the superintendent of one great museum over the department of natural history, I called his attention to the notice which I did not see there, and he explained to me that far from posting up any such a "don't" they preferred that the specimens should run the risk of some damage to preventing visitors from studying them: they were there to be studied, he said, and, if necessary, to be handled. This meant a good deal in a country where the appropriation of the belongings of others, under colour of carrying away pleasant souvenirs of those others, has been developed into a fine art of lifting. The museum official's answer sharply distinguished the practical man from him who is merely setting up in a sort of aimless way a curiosity shop. A similar remark applies in the case of American libraries, the books are not there that listless visitors may give the backs of them a passing stare, but that they may be lent either individually or in considerable numbers wherever it may be most convenient to have them, whether in the building itself, in a school or college, or in the reading-room at the service of the employés of a large establishment. I have also been told that no *bonâ fide* student in the United States, however remote he may be living from the crowded haunts of men, need be at a loss for the use of any book on any subject, however abstruse: provided the book be in the libraries and not so rare as to be hard or impossible to replace, he can borrow it. Perhaps the nearest approach to this among us is the readiness with which the University of Cambridge lends its volumes to its members within the United Kingdom. At Oxford, too, we could borrow books from Bodley's great library until some years ago, when it occurred to somebody to submit that privilege to the cruel voice of the majority, and, of course, the few who would read borrowed books were hopelessly outvoted by those who had no such a desire. The lesson which America teaches is the contrary one, that books are to be read by every one who wants to read them when and where he can, whether he can pay for them or not. It is of a piece with the principle running through the whole educational system of the United States to bring the requisites of study as near home to the student as possible, and that system is regarded there as the salvation of the Republic.

Speaking generally as to the American towns I have seen, I may say that the conditions of life in some of them present many points of contrast with those with which we are familiar in our own country. At the start a visitor landing at New York is astonished at the high standard of discomfort which that city enjoys; both there and in other populous towns in the United States he is appalled by the wear and tear to the nervous system occasioned by what he sees around him. He cannot for some time realise how profoundly all the relations of society are subordinated to the fierce passion of the majority for making money and for making money at once; and how that has in the States prevented the healthy development of municipal life, which with us means a habit of doing what is everybody's business for nobody's pay. In a word, he feels crushed by the despot dollar and weighed down by an atmosphere charged with crass materialism. But, on the other hand, he is soon convinced that there are redeeming exceptions of capital importance and far-reaching potency: for example, he beholds around him massive evidence of the great work carried on by religion and philanthropy; and he cannot move about without

noticing how freely treasure has been spent for educational purposes, in the building of schools, colleges, and universities. For there are Americans who, while engaged in amassing wealth, make it a serious study how to spend that wealth to the best advantage on public objects and for the good of the many. It is needless to repeat how this has resulted in benefiting education, or how it helps education to quarter her small forces of cultured men and women in every town, and how their influence penetrates the mass of philistinism around them, and tells slowly but effectively on the tendency to bounce and vulgar ostentation which characterises the old Adam no less in the New World than in the Old. The cultured American is always popular among us, but not one-half of his charm of manner and old-fashioned politeness is known to those who have not had the pleasure of making his acquaintance at home. An Anglo-Celtic nation which, while still in the making, has produced an Emerson and an Edgar Allan Poe, has a great future before it, not only in applied science and mechanics but also in letters and refinement; and the Mother Country might do worse than take some wholesome lessons from so friendly and so promising a Daughter: a few such have been pointed out in their proper places in the body of these remarks.

J. RHYS.

Mosely Educational Commission.

Report of Mr. W. RIPPER, M.Inst.C.E., Professor of Engineering, University College, Sheffield.

The object of our visit to America was to study American education, and so far as the time would permit to inquire as to the direct influence of education on the progress of American industry. The various members of the Commission had each his own special department in which he was more particularly interested. The writer was chiefly concerned with the education of engineers, and it is to this side of the work that his attention was chiefly directed.

In looking at American education as a whole there was no mistaking the fact that a very strong and keen interest is felt in the subject by the whole community. The education of the people appeared to be the one topic upon which all were agreed, and from the President of the United States downwards all seemed enthusiastic in helping forward the great work. President Roosevelt, in his kind and courteous reception of the members of the Commission at Washington, when addressing the company, said, "I say not that education has *made* America, but I say that without education America is lost."

In addressing the members of the Commission at Chicago, Dr. Edward J. James said, "No matter whether our education in the past is good or bad, in the future we are determined to have all grades as perfect as they can be made." He said, "We work for this end, not only because a great nation should have great schools, but from the conviction that great schools will make a great nation."

The education of the United States is divided into four grades, the common school, the secondary or high school, the college, and the university. The common school is free and compulsory up to the age of 14. The secondary school is free but not compulsory, and is attended by pupils from 14 to 18, and boys and girls attend the same school. The college provides a degree course of study in arts from 18 to 22, and is intended to equip the student with such general culture and accomplishment as shall place him in the rank of educated men. The last course is taken at the professional school of the university, where students receive a special training from 22 to 26 (or from 18 to 22 if the college course has been omitted) for the vocation he is intended to follow. In many cases the student omits the college course and proceeds direct from the high school to the professional course.

Common Schools.—To this portion of the subject more attention was paid by other members of the Commission, and little need be said here except that these schools are being conducted with great spirit and enthusiasm, but in many cases also under great difficulties, owing to the large number of alien children attending them, who

often cannot speak a word of the English language when first admitted to the school. The training of the common school undoubtedly has a wonderful effect on the foreign children in making loyal American citizens of them, though their presence tends to reduce somewhat the standard of efficiency reached by the school as a whole. It has been said of the American common school that it has done more than anything else to make the American nation, and to weld the many and diverse types and interests of which it is composed into one contented and loyal people.

The children of rich and poor alike sit side by side in the common school, and there is thus a freedom of intercourse and community of interest set up which engenders mutual respect not only during childhood, but far on into life. There is, however, a considerable growth in the number of private schools where high fees are paid, and which are attended only by the children of the wealthier classes. The most noticeable feature of the common school was the great preponderance of women teachers. In many schools the whole of the teachers were women, and it is doubtful whether this is a satisfactory arrangement for the training of older boys. In justice to the women teachers it should be said that the discipline and attention of the pupils was generally excellent. It was stated that the salaries offered were not sufficient to attract men into the teaching profession.

Secondary or High Schools.—The secondary schools of America attracted the special attention of the Commission, because it is in this direction that English education has been allowed to drop so far behind and to remain so defective right down to the present time.

In the United States secondary education has reached a high state of efficiency, and it has become as really and actually a part of the American system of education as the primary school. It is said that every little town of over 1,000 inhabitants demands that a high school course shall be provided for the senior pupils of its public schools. The city high schools are prominent everywhere. They are architecturally fine structures, and internally well fitted and equipped with all modern school requirements. In a comparatively small town such as Scranton, Pa., of 110,000 inhabitants, the high school is a handsome building with a large and spacious entrance, with an assembly hall excellently furnished capable of accommodating over 1,000 pupils, and with a large and well appointed gymnasium. There were 1,000 pupils in attendance at this school, boys and girls together, and the age of the pupils was from 14 to 18. This is an average and not an exceptional town. In Pittsburg, a city of 600,000 inhabitants, there were over 1,000 pupils in attendance at private secondary schools, over 2,000 pupils over 14 years of age in attendance at the public schools, and 1,180 pupils attending business and commercial schools and colleges. In addition, there were 775 Pittsburg students out of a total of 814 students attending the Western University of Pennsylvania, which is situated at Pittsburg. In Philadelphia the Central High School is attended by 1,584 boys over 14 years of age. The assembly hall of the school seats 1,750 pupils and the building cost £300,000 to erect. Taking the statistics for the whole of the States, it may be said with close approximation to the truth that 1 per cent. of the population are pupils between the ages of 14 and 18 in attendance

at secondary or high schools. In parts of the Eastern States the proportion is said to be as high as 2 per cent. The attendance at secondary schools in America is increasing, according to President Murray Butler, at a rate five times as fast as the rate of increase of the population.

One is regretfully compelled to ask where are the towns and cities of England with 1 per cent. of their population in attendance at high schools over 14 years of age. Steps are being taken, it is true, to improve the condition of our secondary education, but it will be a long time before we can hope to reach the numerical standard of the American high school. For quality of work, the work done in the best British secondary schools is unsurpassed in the States, but we have too few first-rate secondary schools, and even the powers conferred by the recent Education Act with respect to secondary education will avail but little, unless the pressure of a strong public opinion, based on a real demand for improved education, is brought to bear upon the question.

In the possession of so complete and general a system of secondary schools, the youth of America have at present an immense advantage over the youth of England. In America the system of keeping boys at the high school till they are 18, and soundly drilling them in the elements of a good general education before admitting them to technical schools and colleges, is producing very superior results, and the technical institutions are able with such boys to do the work for which they are intended, viz., to give a sound training in the subjects of applied science.

In England boys enter the technical schools too early and too ill-prepared, and the result is that the technical schools that have been provided in so many centres of our country have in most cases been compelled, and are still compelled, to fulfil the functions of an ordinary secondary school pure and simple, and to provide just those elements of a general education that are necessary to the student before he can even commence the study of applied science. The technical schools are unable to proceed with their special work until at least the second year of the student's course, and these schools are at present impatiently waiting the time when students will come prepared beforehand to take full advantage of the special facilities which the technical school has to offer.

The American parent insists upon the provision, by the local education authority, for the higher education of his children, and when such provision is made he is willing to keep them at school till the age of 18. Though many English parents are willing to do the same, the number of such parents in America is very much larger. One reason is that the American parent is on the average better off and better able to afford it than the English parent. But a more powerful and effective reason is that the American parent believes in education, and is convinced that it is essential to the material welfare and success of his children. Further, the American boy is precociously ambitious, and seems keenly to realise that his school training is part of his real business equipment; it is to him the road to progress, to success, to wealth.

Considering the immense importance and the pressing need of secondary education, not only as a preparation for the requirements of modern life, but especially as a preparation for the study of the

higher branches of learning, it is sincerely to be hoped that the powers now conferred by the Education Act of 1902 will be taken full advantage of by our educational authorities, and that ample and efficient means will be provided for improved secondary education throughout the country. As regards the awakening of public interest, one of the most powerful influences in this direction will arise when manufacturers and employers begin to show a preference for the better educated class of youths, and to require that before boys shall enter departments where skill and ability are necessary, they shall be able to show that they have received a sound secondary education.

Manual Training in Secondary Schools.—An important department of the work in American secondary schools, and one which has done much to popularise these schools and to retain the boys to the end of a four years' course, is the department of manual training. This subject is no longer a new one, but is well established and almost universally adopted in the American high school. While it prepares for no particular industry it gives boys a command of their hands as well as of their minds, and is essential to a full training of the faculties. It engenders not only a respect for but a keen interest in manual employment, with the result that many boys enter constructive trades and become successful who would otherwise have missed their way in some clerical or professional employment for which they were less fitted. These departments are usually extremely well equipped with tools and appliances; they are taught by enthusiastic, capable, and practical teachers, and the course of instruction is productive of excellent results.

Business and Commercial Departments.—In many of the high schools a further addition to the curriculum is made for the training of pupils in commercial subjects. It is the aim of these departments to give as thorough a training as possible in business and commercial methods so that the student may be able to keep books, make out bills, and write business correspondence, as well as possess a general knowledge of business laws and customs. In many of the schools rooms are fitted up with an elaborate business-office equipment, including a large number of type-writing machines, and although such a department seemed somewhat strange and novel, it left the impression that the work was being done very thoroughly and that it had a very serious and real meaning to the pupils and to the teachers.

College Education.—On leaving the high school the student must select his course from one of four alternatives: (1) He may go direct to business or to work; (2) he may proceed to a college for a four years' course of training in the subjects of a general literary education and then go to business; (3) he may omit the college course and proceed direct to a professional or technical school and receive a four years' course of scientific and special training for his future professional career; or, (4) he may proceed from the high school first to the college for a four years' course of general education, and afterwards for a four years' course of professional or technical training. If the last of these proposals is adopted the programme is a very long one, but it was surprising to find how many young men were going through this long course of training, and how strongly such a course was recommended by men whose opinions deserve the highest respect as practical men of the world.

In the United States at the beginning of the century there were 30 colleges with 3,000 students. To-day there are 472 collegiate institutions with 155,000 students all over 18 years of age. The colleges devote themselves to general literary studies, and they award the bachelor's degree to those who complete a four years' course. What is the explanation of the very large attendance of students at college at an age when, in the estimation of many persons, they would be better at business? The question is not easy for the English observer to answer.

Causes of the Keeness for Education.—The first cause is the ambition of the student himself. He is keen to come to the top. It is not enough for him that only a few can be leaders. He means to be one of the few. He believes an advanced education is the way to reach it, and he is willing to stake his time, his money, and his work on the issue. He knows, it is true, that there are men who fill high positions who have not received a college training in their youth, but he knows also that they generally regret the fact, that they are anxious that their own sons shall receive the best possible education, and that they frequently show their appreciation of its value by leaving large sums of money for the endowment of educational institutions. He will tell you also that the competition of the future will be a very different thing from the competition of the past, and that the new conditions brought about by modern science, organisation, and method will require the highest possible skill in every department of work. He, therefore, feels justified in devoting the time required to the laying of a sound educational foundation upon which to build his future career.

In this view he is encouraged by many distinguished employers. For example, Mr. W. Barclay Parsons, engineer of the New York Rapid Transit Railway, which employs an executive staff of about 200 engineers and assistants, in the course of an interview, said, "I do recommend most strongly an advanced education, including a literary training, for my assistants. Though the value of the training may not appear immediately, the trained man is soon able to show the result of it, and he rises rapidly, much more so than the untrained man. He has more self-reliance, especially when faced with a change of conditions. He knows where to look for new information on the subject, and how to make use of it when he has got it. Why do so many of our men take a double course (that is, the arts and professional course)? Because they are ambitious. I do not want any man here as assistant to me who is content to remain a subordinate. That is the difference between the trained and the untrained man. The trained man is ambitious, capable, pushing, resourceful; he has more strings to his bow. He is a man of broader views and wider interests. The untrained man is contented to be a subordinate, he is dependent, and, in general, without resource."

Mr. George S. Morison, a distinguished American engineer, says the young engineer is the man of the future. It is such qualifications as he possesses that will be most in demand in future. Great business concerns are like a great machine, and they need the engineering type of mind to control and manage them. The young engineer who means to make his way in the world must, therefore, receive a broad and liberal education and not only a merely professional one. His education must be broad enough to enable him

to hold his own among other educated men, and to fit him to fill any position, even the highest when the opportunity is presented to him. He says further that the omission of a literary training may not impair his professional efficiency, and is right enough if he is satisfied to be employed rather than to be an employer, but it will deprive him of the power and authority which a broad education gives, and will decrease his chances of filling the highest positions.

Dr. James H. Canfield states that 1 per cent. of the entire population of America has received a higher education in her colleges and universities, and that this 1 per cent. holds more than 40 per cent. of all the positions of confidence, of trust, and of profit which it is in the power of American people to grant, and, further, that as these positions rise in the scale of importance and emolument the percentage of college men still further increases.

The second cause of the keenness for education in America is the freedom of opportunity which awaits all American citizens who have the ability to rise and are willing to pay the price in industry and training. Every youth, be he the son of the President or the son of the labourer, knows that there is nothing to hinder his advancement to the highest positions in public, professional, or commercial life, except his own personal merit and ability. To attain to these qualities he believes an advanced education is essential, and he is willing, therefore, to do anything to obtain it. When at college his education is a very real and serious thing to him, and he is old enough and keen enough to know that the use he makes of his opportunities makes all the difference between success and failure in life. As one American college puts it, "This institution is a place for men to work, not for boys to play."

There are no scholarships given in America. They say, "We don't believe in the scholarship system. We expect the students who can't afford to pay to do something for their instruction, to take some duty in the college or to earn their privilege in some other way."

As an example of the willingness of the poorer class of student to make sacrifices for his education, the following is taken from a New York newspaper of October last, showing how students earn their way through college in the vacations:—

"Reuben A. Meyers, secretary of the Student Employment Committee at Columbia, has issued his report for the past summer. The 192 students who reported their earnings made £6,286. One man earned £90 as a lecturer in psychology and another £40 as a lecturer in English. By tutoring one student made £170 and a life insurance agent earned £150. A night watchman made £20 and all expenses, a printer earned £35, and a street car conductor £34. One man made £10 as a harvester in wheat fields, while a "checker" on the Great Lakes steamships earned £35. Among the other forms of employment which the students turned to during the summer were newspaper correspondent, bank clerk, teacher in vacation playgrounds, civil service examination monitors, tourist's guide, architectural draughtsman and factory superintendent."

Dr. James H. Canfield, speaking to young men, says, "If the applicant is reasonably sure that he may profitably take a college course there is no better undertaking for which to borrow money, nor is there any better investment of borrowed money—nothing which pays a larger interest nor makes a more sure return. Borrowing should be a last resort, but if the choice must be made between entering upon life in the bonds of ignorance or in the bonds of debt, the latter is to be chosen."

Said a fine old Scotch resident to the writer: "The one great concern in America is the education of its young men, and I am sorry I can't make you Britishers understand this." Such advice as Dr. Canfield gives seems to fully confirm this statement.

Attendance at the Technical Colleges.—According to statistics prepared in 1900, there were at that time 89 institutions in America giving professional courses of instruction in engineering of college grade. During the decade 1889 to 1899 the numbers of students increased from 3,043 to 9,679. The course of instruction in these institutions is in all cases for four years, and the students are all over 18 years of age.

With regard to the numbers of students given above, it may be well to call attention to statistics recently gathered by the Association of Technical Institutions of Great Britain. These returns included the engineering students in attendance at all the universities, university colleges, and technical schools of England, Scotland, Ireland, and Wales for the year 1900. It was there shown that the total number of students in attendance was 2,259, made up of 1,141 first-year students, 719 second-year students, 347 third-year students, and 52 who had attended more than three years. But these numbers are obtained by counting students who begin their studies at the immature age of 15, and they are the majority. From the above numbers, therefore, a very large proportion of the first and second year students must be omitted, which leaves a very small number to the credit of the English engineering college. On the other hand, it should be noted that these returns do not include the educational work done by the British Admiralty at the various Government dockyards and at the Royal Naval College at Greenwich, a work which has been productive of more men of mark and distinction in shipbuilding and marine engineering than that of any other institution in the world.

The curriculum of the American technical college consists of about 10 per cent. English and modern foreign languages, 30 to 40 per cent. pure science and technical drawing, and 50 to 60 per cent. technical subjects. The fees vary from £6 to £7 a year in the State colleges to £50 a year in such institutions as the Massachusetts Institute of Technology.

The most noticeable features of the various technical institutions visited were the extent of the laboratories, and the excellence, one might say the magnificence, of their equipment in mechanical, electrical, and physical appliances, the liberal scale upon which these departments were staffed with men of distinction in their various departments of study, and the large numbers of students of an older type than it is usual to see in our own country.

The students come from all classes and conditions of life and from all parts of the United States. In one college we were told several of the students were sons of farmers from the West. They sometimes come and apply for admission with only a few dollars in their pocket, but they work their way up through the college by acting as waiters at boarding-houses, attending to heating apparatus, lighting street lamps, selling newspapers, or acting as car drivers and conductors. It must be said that these students are not despised on account of filling such positions, but are rather respected by their fellow students, and they often turn out among the very best men of their year.

The effect of the presence of such students upon the colleges is worthy of notice. It is certain that the student who earns his tuition so hardly, and makes so many sacrifices, will want his money's worth out of the college, and he will make himself very much heard if he does not get it. He will not readily put up with incompetent or second rate teaching, or neglect, or inefficiency of any kind which will prevent his getting full advantage out of the resources of the college. This is an important point, as every influence which tends to develop the efficiency of the college and to ensure that the fullest use shall be made of its equipment and appliances for the benefit of the student is to be welcomed. The presence of such students, therefore, must be a distinct advantage to the college. A further point is that such students would not persist with their studies under such difficulties for so long a period as four years without good and sufficient prospects that the result of their work will be profitable to them.

What the Practical Man Thinks of the College Student.—Whenever we had the opportunity, the question was put: "What is your opinion of the college student?" "What is your experience of his value as compared with the untrained man?"

The replies to these questions became somewhat monotonous. "What do I think of the college trained man? Well, I am a college trained man myself. My chief assistants are college men. Educated men are undoubtedly essential to the success of our business." One manufacturer, who is at the head of one of the largest electrical firms in America, said: "Is it any good wasting time answering this question?" We were frequently told that "the American manufacturer 20 years ago, like the English of to-day, thought little of the technically trained man. The difference between us now is," he said, "that the American has changed his opinion, while England appears to be where she was."

These opinions, however, which we invariably met with personally, did not appear to represent entirely the opinion of the American practical man on this question a few years ago, as will be seen by the following extract from an address given in the summer of 1900 before the American Society for the Promotion of Engineering Education at New York by Vice-President Robert Fletcher. The speaker said:—

"In order to test the sentiment among representative practical men, request was made for an estimate of the professional value of young graduates and for frank criticism of engineering colleges. About 17·5 per cent. of the respondents have a high opinion of the graduate, finding him generally well adapted to his work. About 63 per cent. have a low opinion, with modifying statements, such as: he is fitted to begin; has much to learn, especially about the simplest practical points; knows too little, and that not well; some picked graduates improve rapidly; granted that he has much useful knowledge and training, he needs to restrain his knowledge until it is wanted. The remaining 19·5 per cent. were doubtful or non-committal. Again, in the criticism of the schools, out of a great variety of views, there was a general consensus of 70 per cent. on the following points: the colleges should do more work on the fundamental subjects; teach thoroughly controlling principles which every engineer must fall back upon; develop practical sense and train the judgment and attend only to such details as are essential; avoid side issues. About 13 per cent. declared that the engineering colleges generally are undertaking too much; that there is too much stuffing with facts and details and not enough thorough work on elementary and basal principles. Some further comments are to the effect that graduates should generally be much better draughtsmen, with far more skill to meet immediate demands; that there is great lack of literary training shown in the inability of many graduates to write a proper business letter and to observe

the most ordinary forms and procedure of business transactions; that there is lack of completeness and mastery, even of those things which the graduate professes to know, such as to make a neat and adequate set of notes, proper facility in some of the simplest field routine," etc.

The above remarks are severely critical, and have no doubt had their due effect upon the work of the colleges. But these institutions are undoubtedly steadily increasing in efficiency and in public estimation, and there is a growing appreciation of the better educated applicant for admission to manufacturing establishments.

Whatever the prejudice may be in some quarters there is no mistaking the fact that, great as is the annual output from the colleges, the demand for college trained men is greater than the supply.

The Pennsylvania Railroad, which is the most advanced railroad company in America, has made it a *sine qua non* that the new appointments to all the executive positions shall be men with an engineering college training, and the majority of the officials on the general staff are men with college degrees. The example of this company is being followed by many other railroad companies who are in constant communication with the colleges for the supply of skilled assistants. In most of the colleges all their graduates at the end of the fourth year are secured by various companies before their college term is completed, and the usual remark on the part of the authorities was, "We could place twice as many men if we had them." Electrical firms especially keenly compete with each other for the best men, and representatives from the firms call at the colleges and select men by personal interview. The manufacturer comes to the college, the college does not go to the manufacturer.

All this is in very marked contrast to the condition of things a few years ago. Formerly letters of application for students specified that they must have had practical experience; now the employers write to say that the student must have had a sound scientific education, they will see that he receives a practical training.

In all cases young men engaged from the colleges are started at a living wage, so that they are at least able to maintain themselves at once.

Advantage of the Senior and Better Trained Type of Student in Technical Colleges.—The students of the technical colleges in America being from 18 to 25 or 26 years of age, and having received a high school and in some cases a college education, it is possible to do much superior work with them than with younger boys. The younger student has generally not received the necessary mathematical training to enable him to do advanced work, he has not a sufficient sense of responsibility in approaching his work, and he does not realise the importance of the issues with which he is dealing, nor the necessity for the strictest accuracy in his work. On the other hand, with a senior type of student there is more strenuous application and earnestness, the work is handled in a different spirit, and very much sounder and more thorough training may be given. In America at the present time the colleges are filled with students of a senior type, who are receiving an advanced and thoroughly sound training, and it is business concerns led by these men with which the British manufacturer will have to compete. The question for our country to ask itself is:

Are we preparing the British youth of to-day to compete successfully with his commercial rival? It must be confessed that, so far as the study of science as applied to industry is concerned, our position at present is inferior to that of America.

Relation between Manufacturers and the Colleges.—The most excellent and cordial relationships appear to exist between the leading colleges and the works, and between the professors and the manufacturers. This mutual helpfulness is of the greatest value from the point of view of the college, whose usefulness and influence depend so much on the extent to which it is able to secure the confidence of the public in whose interest its work is carried on. The college keeps in close touch with the actual practice of the works. There are periodical visits of the students to the works, and similar periodical visits to the college of occasional lecturers who are distinguished engineers or commercial men, and who give an account to the students of some new development or invention or construction of practical importance, with which they themselves have been associated. Dr. Coleman Sellers, a well-known and successful manufacturing engineer, lectures on machine design and is on the permanent staff of the Stevens Institute at Hoboken. The professors are, many of them, at the same time engaged in actual practice as consulting engineers, and they are given full power to carry on their professional practice as long as it is not allowed to interfere with the claims of the college. They say if the governing body cannot trust the professor on this point he is not the man for them.

It is not so much that the professor in America becomes the practising engineer as that the practising engineer is invited to become the professor, and that as an inducement to him to accept the position he is permitted to continue as much as he chooses of his professional practice. The effect of this is that the college is prevented from becoming a mere book-learning institution. It is considered vital that the professor should be "in the field of practice," otherwise he is liable to become stale and out of date, and to attach exaggerated importance to unnecessary things. Whatever may be thought of these views, there is no doubt that their effect on the constitution of the American college staff has been to the immense advantage of the colleges and of the character and quality of the work done by them.

Education of Apprentices.—The general practical training obtained by the apprentice in British workshops is unequalled in any other country, and in America the British trained apprentice is a very much valued product, because his training is longer, he is taught more thoroughly and he is a more patient and careful workman than the American. In the American workshop the British trained workman is said to be an easy-going gentleman when he first starts, but he soon settles down to become the same aggressive and progressive person as the rest.

The question of the education of apprentices is now receiving much attention in the United States, though by no means more so than is the case in Britain. There is, however, this difference, that the British manufacturer undertakes this work from a sense of duty and patriotism, while the American manufacturer does so as a matter of necessity, to meet the demands of his own business, to equip himself with a better trained class of employés; in other words, he takes up the question of the education of apprentices

because it pays him to do so. For example, in talking with one of the directors of the Baldwin Locomotive Works at Philadelphia, we were told: "The result of our efforts to train apprentices is beneficial to the works, first because we get a large application of youths for admission as apprentices in consequence of the training we give, and we have, therefore, a better pick of youths. We make a careful selection of the best by means of an oral entrance examination. Secondly, young men who have done well with us as apprentices are nominated by Baldwin's for good positions at home and abroad. These young men are loyal to Baldwin's and look upon it as their alma mater. Many of them reach responsible positions in connection with home and foreign railways, and whenever they can put work in the way of the firm they do so. They are a standing advertisement for the firm in all parts of the world."

A feature which should be mentioned in connection with apprentices in several large works in America is that an official called a "superintendent of apprentices" is set apart to look after their interests, to watch their work, and to see that they are promoted from step to step so that they may obtain the best possible training in the time. The duties of the superintendent extend also to observation of their health and general conduct, to visiting their boarding houses to see that these are respectable and suitable, to advise them as to attendance at evening classes, and to watch the regularity of their attendance. He also prepares weekly reports of their work and progress which are examined by the heads of the firm, who in some cases arrange for personal interviews with the apprentices at the time of the examination of their reports. In this way the employers are able to keep in close touch with each apprentice. His history, character, and progress are well known to the firm, and a feeling of friendliness and co-operation is thereby secured, with beneficial effects both to the apprentices and to the firm.

Evening Classes.—There is less organised effort in America for the education of the artisan than we have at home, and evening schools are not a feature of American education. The great State colleges of America were founded by funds granted under the Morrell Land Act, with the object of supplying teaching in "agriculture and the mechanic arts." These colleges have become, however, institutions of the highest grade, and provide advanced training for the leaders rather than elementary training for the rank and file. It was a very general subject of complaint that schools originally intended for the education of artisans, and endowed for that purpose, tended to run away from their task, to neglect their fundamental work, and to become second-rate colleges for advanced students. In some cities numerous evening classes are at work, but there is seldom anything in the nature of technical teaching given in them. There are, however, some important exceptions, as, for example, the Cooper Institute, New York, and the Williamson Trade School, Philadelphia. Several of the colleges also, as, for example, the Lewis Institute and the Armour Institute, Chicago, have important and elaborate evening class arrangements.

There is no organisation of evening class instruction comparable with that of the English Science and Art Department. The nearest approach to it was the evening class work of the Young Men's Christian Association, which is a remarkably strong

organisation throughout the United States. Their educational work, however, was chiefly confined to elementary instruction in commercial subjects.

The evening school education of Britain was spoken of with much disparagement in America. It was said that Britain is dependent for the technical training of her people on evening class instruction, and that the system had proved a failure. Although it is undoubtedly true that the evening school system of our country is quite inadequate to meet the modern needs of a first-rate industrial nation, yet it is a great mistake to undervalue the extremely important work that has been done, and is still being done, with so much success throughout the length and breadth of our country.

Wherever one went in America, English and Scotch foremen and managers and heads of departments were everywhere to be found. These men were there because they deserved to be there. They are also to be found holding similar positions in every part of the world. They have as their assistants college trained men. They are themselves, most of them, the product of the evening science class. and a testimony to the efficiency and effectiveness of British evening science class instruction.

Correspondence Schools.—The enormous proportions which the system of instruction by correspondence has reached in America calls for special notice in this report, especially as the bulk of the work done through that system is concerned with the teaching of technical subjects to the artisan classes. There are, no doubt, instances of unsatisfactory and even fraudulent organisations professing to give instruction by correspondence, but these are evidently the exception and not the rule.

One of the most successful of the correspondence institutions, with its headquarters at Scranton, Pa., was carefully investigated. During the past ten years it has enrolled 600,000 students for the study by correspondence of technical subjects. It has offices in 23 different cities, and an organisation of 1,500 agents and interviewers, together with a large staff of instructors and examiners, making up a total of 3,200 employés. The secret of the success of this organisation is that it meets a real demand, and that it has a definite aim from which it does not allow itself to be diverted—to help the artisan class. It undertakes to teach one subject at a time, and for this purpose it provides special courses of instruction bound up in volumes. The volumes have been prepared with great care, and are written in language suitable for their purpose, with the addition of exceptionally well-prepared illustrations. "We take a man," they said, "engaged in a particular trade, and we teach him the theory of that trade, nothing else, we confine ourselves to that. We set the course to fit the man, we don't try to make the man fit the course. We get to the point, we don't wander all round it and never reach it." In this respect we have some lessons to learn from them.

Industrial Success of America.—American industrial success is due to the combination of a large number of contributing causes, of which education is undoubtedly one. In so far as American educational advantages are superior to our own, to that extent is American industry reaping an advantage. But there are other influences promoting American industrial success, among them the following:—

The great natural resources of the country and the invigorating influence of climate; the qualities and characteristics developed

through a race of pioneer forefathers who faced tremendous difficulties and won success in a new country; the phenomenal keenness for business enterprise shown by all classes; the impatience of slow and antiquated methods and devices, and the intolerance of any method when a quicker or a better can be found; the development of improved systems of works' organisation, and management, including the policy of specialisation and standardisation; the assistance and encouragement given to trade by the Government; the concentration of capital and ability in great concerns, and a world-wide commercial policy; the unrivalled railroad facilities and lowness of freight rates, and the high development of system and method in transportation; the versatility, readiness, and resource of the industrial workers, and genius for building up business in new directions; the constant influx of skilled workers from Great Britain and the continent of Europe; the sobriety of the Americans as a people; the attention to small economies, and profits on utilisation of waste products; the personal and friendly relationships between masters and men, and mutual co-operation for improving the plant, reducing costs, and increasing output; the attention paid to the comfort of the workers, not from philanthropic motives but as a means of increasing the general efficiency and effectiveness of the workers.

Conclusions.—In this report a description is given of the present position of educational opinion and aim in the United States, as far as it could be discovered by the writer. On many of the points raised herein, and especially on the question as to the wisdom of adopting American methods in England, there would be great difference of opinion. Each country must work out its own educational problem for itself in its own way, and imitation of one country by another without regard to local conditions would be absurd.

Speaking from the point of view of the education of engineers, one would say that from the English standpoint too much importance may be attached to prolonged literary training, and not enough importance to the practical training of students during the earlier years of their career, nor to the cultural value of a scientific and professional education. For the comparatively few who, by reason of their ability and opportunity, may hope to fill some high administrative position, a prolonged course of training, both literary and professional, such as that recommended in America would be undoubtedly of the greatest value, but English opinion would generally not approve such a training for the great mass of students who are youths of only average ability.

In some points, however, the British people might imitate America with advantage. It might do so, for example, in the direction of increased public interest in the subject of education; in the speedy provision of an improved system of secondary education; and particularly in the provision of an advanced type of teaching in secondary schools, so as to ensure that the time spent in them by the older boys is spent to the best possible advantage. We should do well also to imitate America in the provision of institutions for carrying on the highest grade of research work in science as applied to industry, and in providing and maintaining them from Imperial funds, and not depend so much as we do at present upon local effort alone.

Some further points requiring earnest attention are: (1) the necessity for encouraging, strengthening, and developing the great work which is being carried on in the Science and Art Department evening classes of the Board of Education, and of our keeping this Department very much alive, alert, and responsive to the industrial needs of the country; (2) the necessity for improving the curricula of the respective trade classes for artisans organised by the City and Guilds of London Institute, so as to make these classes more suitable for their purpose, and more attractive and useful to the men for whom they are intended; (3) the necessity for a closer relationship between the technical schools and classes and the manufacturers, particularly for the purpose of the most efficient working of schemes for the education of apprentices.

W. RIPPER.

Mosely Educational Commission.

Report of Mr. CHARLES ROWLEY.

EDUCATIONAL RESULTS.

It is not easy to account for the depressed feeling which has come over many of our countrymen on the subject of education and on the question as to how it influences our workmanship and our trade. Germany and the United States are at once in our minds when these subjects are bruited. It seems to be quite clear to those who know most and can best judge, that both those great countries have also their schools of pessimists who deplore their inadequacy in regard to trade output, the quality of their products, their shortcomings in educational matters, and even the quality of their citizens. There are optimists and pessimists in each of these countries, and the doleful or the dismal are usually heard most, being the loudest or most persistent. The sanity of the matter seems to be stated in the simple truth that we have a great deal to learn from each other, not only in what to adopt but in what to avoid. Coming as I do from the centre of the greatest hive of industry in the world—South Lancashire, and the adjoining West Riding of Yorkshire—it would be quite easy for me to prove that for workshop organisation, for expert direction, for the quality of our goods, for a good average of pay to the labourer, for general material advantages of cheap and good food, and for fairly good housing for the vast majority, there is not another six or seven million to match it. Our banking returns, our exuberant growth in a hundred ways, show that prosperity is still with us in spite of growling and sensational statements, and even in spite of trade gambling and of cotton corners. I am bound to say from experiences in Germany and just recently again in the States, that we have workshops in our midst as well thought out, as finely equipped, and as capably run as any that can be found in those great countries. No undue note of depreciation of British methods can be got from me after a careful comparative study of the remarkable modern developments in other lands as well as at home. This is not to utter the childish absurdity that we have nothing to learn, and nothing further to do. It is not even a mild gloat about our noble selves. It is part of the truth of the situation. As a workshop man I can well remember the days when I could say of a job, "It could not be better done," but it never prevented me from trying to improve on myself and on the work of others. Conceit of that perfectionist sort is surely to be described as "living in a fool's paradise." Truer judgment acknowledges excellence wherever found, but is always ready to go better. That we at home have serious drawbacks is not to be denied. For example, our defective secondary education is a real danger. The worst is that most people are blind to this serious state of things. In the States we find an enthusiasm for education which we seek for in vain at home. This vigour in the great cause is apparent in all schools, elementary, secondary, technical, and in the universities. The heads of the great universities

and colleges we had the privilege of knowing on our recent visit struck all of us as being men of the finest type—scholarly, businesslike, enthusiastic. They are one and all true leaders of men. Any nation might be as proud of them as we were. They seem to have a practical quality, an openness of mind, a manly refinement, a real democratic touch which the old universities at home do not seem to produce in anything like abundance. If the inestimable charm of old foundations is to prevail as the one thing, besides society functions and sport, in our beloved antiques, if no squaring with modern ideas, modern research and methods are possible with us, we must submit to this satisfied, if dangerous, somnolence. The best or the most urgent work of the world will then, of course, have to be done by other people.

My notes are in the form of observations of results, or products in the States. These products are, men and women first, and then what they are capable of producing in literature, the fine arts, the arts and crafts, and in domestic utilities generally. Others will speak of the technique of teaching, and some doubtless will discuss manufacturing and the rest on the larger scale.

With regard to the marvellous growth of material riches in the States, there is only one opinion as to its extent, value, and diffusion. One other thing is certain—they are only at the beginning of their material accomplishment, vast as it now is. It is this mighty achievement in less than one century that is the wonder of the world, and which has the obvious tendency of overshadowing everything else.

Having had the honour of being selected for the second Mosely Commission to inquire on the bearing of education in the States on their remarkable success in some industries, I laid out for myself this task of studying products as well as schools. As to the technique of education, that, as I have noted, will be left to the experts to report upon. It is, however, surely too early to expect or to trace a definite natural growth of the finest work from their teaching establishments. The last generation has been largely fed, or at any rate vivified, by the influx of foreigners with European training.

The energy, the exuberance, of our American brethren permeates everything, and is seen everywhere. I am inclined to think that this noticeable habit of universal hurry is decidedly injurious as regards solid education and workmanship in all schools from the primary to the university that we have seen. It is very engaging to see everybody so much alive—teachers, scholars, managers, and pupils. At first blush it makes one feel that we are somewhat slow and sleepy at home. But those members of our Commission who can give a good comparative view of both systems assure me that slow as we seem to be, lesson for lesson, and from results shown, we go deeper and better at home. I notice the same kind of observation in many of the written articles by American educationists. There is an educational seethe or unrest there as well as here. It is well that it is so. One writer in "The Forum," December, 1903, page 256, says, "psychological dilettantism and speculative experimentation have been permitted to work confusion in vain endeavours to find a way out of the present dissidence between school programmes and the needs of American civilisation. The trouble is there is among schoolmen no hard and fast agreement even concerning the most elementary details of everyday practice."

When we come to the products, especially the arts and crafts, the evidence of haste, of want of real thought, is very marked indeed. I have not been able, for example, to find any real originality in design, in ornament, in anything where the brain, the hand, and the higher emotions work together. That is, in large or small things which are other than mere utilities. Even here, as everybody knows, at the best periods in every country all objects took their quality from the prevailing high ideals of the community at large, a demand assisted to create the supply. Workmanship, not words, are the truest reflex of a people—by their works you shall know them.

Most American products which are used by the million are of a much lower grade of form, colour, and presentment than our own, poor as many of ours are just now. Here in the States the raw utility of most things comes into glaring evidence, and you find the pottery, cutlery, furniture, and general decorations poor in the extreme. It is difficult to see what influence their universal teaching of drawing in all schools can have had while both makers and users are satisfied with such a flood of solid but unshapely articles. In good houses, where money is no object, foreign domestic wares are, of course, used. In the best hotels even, compared with those outside the great cities, the change from moderate goodness to immoderate badness all through the domesticities is very noticeable.

I am inclined, or rather am forced to believe, with all the best feeling possible, that the "plantation melodies" of the coloured people is the finest and most original art-product on that great continent so far. Dvorak saw that, hence his selection of some of those folk tunes for his noble symphony "From a New Continent." There is little else that is original, truly of the soil, to the manner born. Even their efforts in sculpture and painting, with few notable exceptions, show a singular lack of original power when we remember that they are the product of a nation so strikingly fine and noble in essentials. With regard to this latter branch of work I am strongly of opinion, after 25 years' study of it, that the prevailing French influence has not been salutary. French genius and American genius are surely anti-racial, and all true art, great or small, must grow out of its own soil or the result is artificial, not genuine. No sane person would dream, for example, of teaching an Anglo-Saxon art craftsman Japanese methods, or of imposing our methods of teaching on such distinguished Orientals as this greatly gifted people. Pending the rise of a school of their own, all true Americans will find the English influences better for them than French—they are more in the line of their own thought and feeling, just as our literature is, and must be. The fascination of studying and living in Paris, so obvious in American production, has had the one result of producing work which is imitative in sculpture, painting, in the domestic and decorative crafts.

Having been entrusted by my Committee at home with some money to buy examples of American products, I had the greatest difficulty in finding pottery, glass, textiles, or even printed books, which could be put forward as attainments for students to see and to learn from.

These remarks are not made in depreciation of American methods. Just the reverse as far as I am concerned, for in each of my three visits I have been simply astonished at what they have done in

their great country during a single century, and have lost no opportunity of telling them so. The mellow, matured, inevitable beauty in the noblest work which is seen in the higher craftsmanship, will doubtless come in due course, although there is no sign of it at present. But to achieve that, they must put more thought in design and work, and above all they must place all their workers in free competition with the best that has been and is being done in every other land.

The primary schools everywhere are of great excellence. This is the result of a policy firmly planted from the first. Every child they insist must be as well instructed as possible under the circumstances. There are schools of one pupil, and others too large, with four or five thousand scholars. It is not less than heroic we say when we see how they tackle the children of foreign parents. In one school we saw children of 20 different nationalities. The temper and patience and skill of the teachers is beyond praise. The order is good in every case. Discipline is enforced in every school and is bound to have a good effect on the future citizen. Their singing on the whole is good, especially when strangers are present, and they sing their national hymn to the same tune as ours, at least once a day.

In most of the schools in the great cities, and especially in those of higher grade, we were gratified to find ample displays of good memoranda of great buildings, statuary, and pictures, all after the great masters. Our schools, and even universities, are lamentably deficient in examples of noblest workmanship. Their system also of topical lessons, such as we heard, for example, in Washington schools, would be well if planted here. Civics, as a rule, are well taught; with us they are taught imperfectly, in many cases quite disgracefully.

We saw in one class-room of 50 scholars an excellent display of drawings on the blackboards, while hand pictures relating to Columbus were passed round to every scholar. It was the anniversary of his landing on their shores. Another time they would have great writers, or musicians, or animal or Nature-study subjects all impressed on the mind by objects and by pictures which were passed round. In December, as Christmas approaches, they fill the room with pictures of the Mother and Child.

In labour-saving machinery our kin across the sea are, of course, acknowledged experts. At such a triumph of workshop organisation as the Waltham Watch Works I found all this in perfection. Perfect sub-division, endless ingenious appliances, care for a most intelligent body of 3,700 men and women workfolk, with a highly-skilled bureau of experts and managers directing the whole and constantly re-adjusting and improving their methods and their plant. It would be a mistake to suppose that we have no such organisations. What is the best spinning mill but a wonderful agglomeration of labour-saving appliances of the most perfect kind? Our friends beyond the sea have, however, secured some trades by logically focussing all the knowledge and skill known on particular products, just as the German chemists have secured the aniline trade on English discoveries. We require more of this focus. On the other hand, I have never seen a great ironworks at home in such apparent confusion as the enormous Baldwin Locomotive Works at Philadelphia. The risks there run from unprotected machinery, crowded shops, enormous dangers to life and limb, would not be

allowed for a moment over here. At this and kindred workshops the evidence of the value of their great technical schools on the heads of departments was fully realised.

One obvious shortcoming of their technical schools can here be noted. All, or nearly all, the appliances are of American make. It is no disparagement to machines of home-make to say that this exclusion of the foreign machine is likely to lead to serious narrowness and to loss of the best examples for teaching purposes. At Lowell Textile School, for example, I found no Lancashire or Yorkshire machine for spinning or weaving. It is acknowledged that in these old homes of the textile trade a machinery production has been evolved which has no equal, certainly no superior. At Lowell, therefore, the school looked inadequate and quite secondary to one who knows our great school of technology at Manchester, where we have the finest up-to-date machine from any country which can best produce it—German, Swiss, French, American, British. At the Lowell Textile School, according to the Commissioner of Labour in his 1902 volume, page 143—"The value of the equipment is 100,000dols., but fully 80,000dols. worth of it has been donated to the school," by American manufacturers of machinery, of course.

Nothing is more fallacious than judging a nation's condition from a mere observation of the facade of its great cities. New York and Chicago have prosperous enough looking facades, but the condition of the dwellings, mostly tenement houses, of the mass of those great populations is too often painfully ghastly. President Charles W. Eliot, the distinguished head of Harvard University, describes a small town, its schools, and the various influences that go to make a people, and he writes this striking passage—"Basal American Society—the peasants on land, in small towns, earning five to ten dollars per head of house per week, not per capita,—is about half the nation. However hard it may be for City people to understand it, the fact remains that \$250 a year is a sum adequate to the comfortable and adequate support of a family of seven or eight persons in a town like the one described, provided that a house, a garden, and a pasture is secured to them." Thus we have on the highest testimony evidence as to the value of their school system on about forty million people. The same writer says that "America's contribution to civilisation may be stated as follows—Peace keeping, religious toleration, well-being of newcomers, diffusion of well-being." Again, in speaking of the education of this mass, he says: "What prodigious possibilities of improvement are suggested by the single statement that the average annual expenditure for the schooling of a child in the United States is only about \$18."

In contrast with all this is the display of riches in the great houses, hotels, banks, insurance offices, and other rich corporations in the great cities. Education should surely tell here, if anywhere. And so it does in some notable instances where travelled Americans have taken home some of the gems of genius and workmanship from Europe, and from the Far East. The United States are superlatively wealthy in such possessions, some being in public exhibitions, some in private mansions. The general trend, however, is to a costly and vulgar magnificence as seen in their churches, hotels, public buildings, and millionaire homes. I have carefully studied all kinds of structures where "money no object" has been too plainly exhibited. The result is not by any means delightful. The utter

absence of that note of fine and noble design spoken of, the exuberance of glitter and expensiveness, and the want of dignified repose are too glaringly afront of you. You see on every hand glaring examples of the obvious and blessed truth that money cannot buy everything. Some of the private houses of settled and cultured people in Boston, New York, Baltimore, and Washington leave nothing to be desired—they are as good as our best. One of the most refined and dignified of their great homes is the White House itself, where we had a delightful evening with President Roosevelt. Compared with the tawdry oppressive glitter and real vulgarity of some of our palaces, the White House is a model of what a home for the President of a mighty people should be.

Special schools are a great feature in the exuberant experimentalism of this great people. Mr. Pulitzer, of the *New York World*, has just endowed "A School for Journalists" at the Columbia University. I had the privilege of addressing a meeting of journalists and their friends in New York. On their kindly assurance that I might speak with perfect frankness, I took the opportunity of telling them how their morning, evening, and Sunday papers struck one. How one deplored what seemed to us their utter vulgarity, the constant prying into private life, their degrading sensationalism, their distortion of our common language, their partisan abuse, their general incorrectness, their pictorial abortions, and their so-called comic efforts. I could give them instances from reports on our own Commission, the inaccuracy in attributing to one or another of us what we had never thought, let alone said. I assured them that to be alone with their ninety-paged Sunday papers was like living in a mad-house. These good friends were uproariously delighted at my blunt summary of their sins, and not one of them said it was not so, but rather that I had hit on the truth. It is to be hoped that the School of Journalism will correct all this, though one doubts it. During the evening it was pointed out how really powerless their journals were in front of a great social tyranny like Tammany. The journalists present represented all the great papers of New York and Brooklyn. To their honour all of them were decidedly anti-Tammany. We had bought these papers during the election, and we failed to get a newspaper of repute on the other side; yet the party of corruption won by over 60,000 votes.

The expensive but highly instructive Horace Mann School at Columbia University and the really charming practical school close by were of the highest value as showing an ideal to teachers to aim for and to practice in. The most remarkable of these practice schools for teachers is the Dewey School at the Chicago University. There the possibilities of interesting children on sound practical lines on a really high plane are as delightful as money, skill, and devotion can make them.

Those who went to Hampton, Virginia, to see the great work in progress for the elevation of the backward races felt that it was the most interesting and touching thing they had seen during our visit. The evening before our day at Hampton, we had heard in Washington a chorus of some 200 negroes rehearse Coleridge Taylor's fine setting of Longfellow's "Hiawatha." Here was an African genius giving delight, and being interpreted by skilful singers of his own race, 4,000 miles away. At Hampton there are 1,000 negroes and 200 Indians. Both sexes are taught together,

and we are assured there is no difficulty or danger, although their ages are from 16 to 22. They are young men and women who will not drift to towns or cities, they return to the country to agriculture, farming, and to school teaching. They pay most of the cost of their board, lodging, and tuition. Many of them earn money while there, doing service during the day and attending the excellent night schools. All of them have to spend their first year working on the land, with some indoor lessons. After that their academic course proper begins. The order and decorum is perfect. They have a practice school of some 500 black children from the district. No words can express one's feeling of thankfulness to the teachers, managers, donors, and all the workers of this truly noble and wonderful institution. It was quite near to Hampton that the first cargo of African people were landed. After all these years we now see what a noble people are doing to help on their fellow-citizens.

To hear over 1,000 of these students sing their folk-song is one of the events of one's life, and I say this having paid three pilgrimages to Bayreuth, and having the privilege to sit under Dr. Richter every winter Thursday in Manchester. No single thing in our experience was so profoundly beautiful and touching as this day at Hampton.

This and similar institutions are surely the right way to solve the coloured problem. We have similar problems in our own vast possessions. The achievement at Hampton and at Tuskegee are object lessons for us.

There is, of course, no analogy between American conditions and our own, so to institute comparisons is to do a misleading thing. They are fighting out their own salvation in their own way, and for a new country they are, on the whole, doing it splendidly. Many of the matters we are accustomed to deplore over there are common to us at home. Among these are the race for riches at any cost, the amazing adoration of mediocrity and the common-place, the worship of quantity rather than quality. The over strenuousness of life in many cities amounts to a disease. Outside the hum and battle of great cities there is, of course, a great deal of sound healthy living, but there is also quiet and dignified living, not surpassed in the older countries, even in their chief cities.

It is only to the saner, truer, more complete education so amply provided that we can hope for a better civil life there or here. Our American friends know that they are in thralldom to trusts, and to astute corruption in municipal life. President Roosevelt and all the best minds of the country are aware of the evil influences arising from these degrading but powerful organisations. How to free themselves is one of their chief tasks, and until they are free their social existence is imperilled.

A final word of thankfulness for all the help, hospitality, and heartfelt affection from our kin beyond sea to all of us must bring these notes to a conclusion. May we never meet otherwise. Friendly rivalry and free intercourse between each country for all of best we can each produce is the true policy for both of us.

CHARLES ROWLEY.

Mosely Educational Commission.

Report of Mr. A. J. SHEPHEARD, Chairman of the Technical Education Board of the London County Council.

I can only touch upon some of the many questions which came before the Commission. In making a selection, the following appear to be those which I can most usefully deal with: The general views held in America; the organisation of the education authorities and the educational system; teachers—their training—their work; manual training; technical work.

General Views held in America.

It must be remembered in connection with the observations under this head (and, indeed, throughout this report) that, although I have twice been in the States for four or five weeks, my time has been all too short to gather correct ideas concerning so large a country. Further, as I have met, in the main, those persons who might be considered to be specially interested in educational work, I may have gathered my opinions from looking too much at one side of the subject.

I think, however, I am right in saying that there is in America a more widely spread desire for the education of the people than in England, and it is generally recognised that education is to be given to every citizen as a matter of right. Each child is brought up on the understanding that it is the duty of the State in which he lives to give him the best education he is fit to receive, and the community understands that the public funds are to be drawn upon to provide such education.

I found, further, that most educationalists hold that the best education, in the end, is not necessarily that which costs least money, and consequently the authorities, as a rule, have only to be told what is the best in order to provide it. This is what I may call the general atmosphere concerning education, but there are, of course, exceptions. For instance, I found in some places that, when the public funds were hard to obtain, the teachers' salaries were reduced very considerably; and there are in America, as in other places, times when the economical spirit prevails, and then education suffers.

Again, a great advantage which American children have is that education is given free, not only in the elementary but in the high schools, and this means that a boy or girl is entitled to free education up to the age of 18 or 19.

More than this, it is looked upon as a very common and desirable thing for a child to pass from the elementary to the high school. I believe in the Northern States the average of students thus passing on is about 7 per cent., and, when it is remembered that the school

population includes all children between the ages of 5 and 14, it will be seen that this 7 per cent. is a very considerable average of the students who can take advantage of the high schools. The school system, it will be remembered, is as follows: *Kindergarten, beginning at 4 or 5 years of age; elementary and grammar, 6 to 14; high school, 14 to 18; university, 18 onwards. A child, therefore, who has attended the elementary and high school will have had an education of twelve years, and if he attends the university four or five years will be added to this twelve.

As to the mode of teaching, this is no doubt rather different from that which prevails in England. It is largely of a conversational nature, and based much more on the deductive than the inductive process. It seems strange to an Englishman when first he goes into a school to hear (instead of a set lesson) the teacher throwing out a number of suggestions to the class for their discussion. †She leads the children's thought over the suggested subjects, and draws from them their own ideas. Her own are kept back, and more often brought out from the children by means of suggestive questions than authoritatively stated. There are, of course, times when books are read and information supplied; but the main idea of education seems to be to let the children teach themselves.

The teaching is always of a very practical nature. It is not only in the matter of manual training (which further on I have referred to specially), but in everything that is said and done that it prevails. For instance, the children in the elementary schools are taught how the Board of Education is controlled, and this instruction would include the constitution of the Board and even the names of its members. The duties of citizenship are very strongly enforced, and everywhere the bearing of education upon business and commercial proceedings is brought out. Excursions into the country for botanical and geological purposes are frequently taken, and these are counted as school work. And in many other ways this "practical" idea is developed.

These remarks as to methods apply mainly to the elementary schools, though to a large extent the same ideas prevail in the high schools. As to the universities, I did not study them sufficiently to enable me to speak with special knowledge.

Education Authorities.

I propose to describe the system adopted in the City of New York, but, speaking generally, New York in this respect may be taken as representative of other large cities.

The education authority is the Board of Education of the city, appointed pursuant to the provisions of State Acts. This Board consists of 46 members appointed by the mayor of the city, solely on his own responsibility. A third retire every year, their places being filled by the person who, for the time being, is mayor of the city. The Board appoints a superintendent, who is the official head of the whole education of the city. The term for which the present superintendent has been appointed is six years. The Board also appoints a number of district superintendents, persons

* Although I have given the above statistics of school age there is no hard and fast line drawn, and the children, or young people, pass from one stage to another according to capacity.

† Teachers are nearly always referred to in America as females.

who, under the superintendent, are responsible for and control the education in their respective districts. Next below these district superintendents are supervisors, whose work is, as their name indicates, to supervise the schools. Next in rank to these supervisors are the teachers, the head teacher being looked upon as higher in rank than the assistants. The district superintendents sit as a Board when they please, the superintendent being *ex-officio* chairman. At this Board they talk over matters affecting the education of the city, and come to any decision they think right. These decisions have no legal effect, but they serve to strengthen the superintendent in his work. The superintendent has the sole right to issue teachers' licences, and he is regarded by the official staff, both at the offices and in the schools, as their undoubted head. He presides, as of right, at every school he visits, and his word is law.

The practical effect of this system is, of course, that the superintendent is the real education power of the city. Nominally the Board of Education is this power, but inasmuch as the superintendent is an expert in the matter of education, and has full information concerning all matters, and is official head of the office staff and teachers, he is looked upon by the Board as so great an authority that they seldom venture to resist his views. The extent to which the superintendent governs the Board depends, no doubt, upon the individual character of the person who for the time being holds such office. If he is a very strong man he reigns almost absolutely; if for any reason he does not wish to assert himself sufficiently to exercise absolute authority, his power is lessened. The ideal superintendent, of course, would be a man who, while stating his opinions with courtesy and force, would leave the Board to make the decisions. But such an ideal character is hard to find.

Such is the system generally. In practical working it is fairly satisfactory, but to my mind it has one great blot, viz., that the organisation of the education of the States is mainly carried on by paid officials as a business. This may be inevitable, and some may think the system is right. For myself, however, I consider the practical exclusion of the voluntary element in education to be a great loss. I sincerely trust that the new educational authorities in England will find some method of throwing upon the voluntary worker, not only a great deal of responsibility in the centre and in the settlement of principles, but also in connection with the details of the various schools and educational institutions of the country.

Teachers.

The teachers are, as a rule, trained men and women, having, with a very few exceptions, passed through a normal or a training college. Women vastly preponderate, and in the elementary schools the male teacher hardly exists. This excess of women is apparently more likely to increase than diminish. I found that in New York City Normal School there were 211 female and six male students. At Bridgewater (Massachusetts) Normal School there were only 30 males to 224 females, while at a normal school at Washington I found one male student only out of 86 pupils.

Educationalists in England will at once appreciate the disadvantage arising from this position of affairs. In endeavouring to ascertain the American view of the situation, I found some who were

prepared to argue that it was no disadvantage, inasmuch as the moral influence of the women teachers on the boys was all for good, while they were, undoubtedly, as good teachers as the men. Many, and perhaps the majority, of those we met were frank enough to say that it was a question of money only; that female teachers were prepared to accept smaller (say, two-thirds) salaries than the men, and that they were appointed accordingly. The situation was pithily put by one of our Commissioners. "It is apparently thought better to have first-class women than second-class men." Certainly, it seems to an outsider incongruous and undesirable, especially where (as occasionally happens) women are appointed to teach boys wood-working in the school shops; and also when (as seems to be the case) the practice is creeping up into the higher schools. For myself I trust we shall not find it necessary to adopt the system in England. What the lasting effect in America will be it is too early to judge, time only will show; but I cannot bring my mind to any conclusion other than that something of true manliness will be lost if boys are left to be educated mainly by the opposite sex.

In New York State there are several normal colleges provided by the State and one by the city. The course in all is similar, but the method of application varies at the different colleges. The students are, with few exceptions, persons who have "graduated" at a high school, and they are given two years' training in the normal school. Such training is, as to about three-fourths of it, theoretical or critical, and, as to the other fourth, practical. If they pass these two years' studies satisfactorily the superintendent grants them a "teacher's probation" licence for one year, extended, if their work is satisfactory, to a second and third year. After this period of probation a full teacher's certificate follows, unless for any reason the superintendent thinks it right to withhold it.

The appointment of teachers to the schools is a matter of automatic routine. As soon as the teacher has her certificate she is put down on the list in order of seniority, and as a vacancy occurs is appointed by the superintendent to such vacancy. No exception is made in this mode of appointing to schools, unless, it may be, that occasionally a head teacher asks for a particular teacher; or a teacher applies that she may be sent to a school in the neighbourhood in which she lives, when the request may or may not be complied with. This method of appointment is not regarded as completely satisfactory, but it is adopted in order to prevent any political or municipal pressure being exercised. It is further stated that the rule works well in practice, because if an appointment is a bad one, this fact shows itself early, and a change is made.

The above remarks refer to the case of the ordinary elementary teacher, but provision is made in some of the universities for the training of teachers on a higher level. This does not necessarily mean that they are trained to become teachers in secondary schools, but that they are trained either for such schools or for the higher positions on the elementary side of education. Amongst such positions would be that of supervisor or superintendent or head of a school or college, and it is stated that the ordinary elementary teachers are quite willing to take advice from, and would gratefully attend lectures given by, such specially qualified teachers.

To some of these training colleges special elementary schools are attached, avowedly for use by the students in their practical work. This is a distinct advantage to the students, and the principals of

the schools state that after a time the parents of the scholars prefer these schools to the ordinary public day school, as the presence in the school of experts in teaching is found to more than counter-balance any disadvantage which the children derive from the experimental teaching of the students.

The obtaining of degrees is regarded by the universities as a desirable equipment for teachers. I am told by Dr. Harris (head of the Government Education Department at Washington) that there are more than 200 colleges (not including normal schools) which offer training courses for teachers, and that 25 universities and colleges of high standing have pedagogic departments offering degrees in courses arranged for teachers. A few of these colleges give the B.Ped. (Pedagogic) degree, but generally the courses of study are so broad that the students may earn the regular A.B.

I may mention that two universities which I visited, viz., Columbia (at New York) and Chicago (at Chicago), grant these special education degrees. At Columbia University I found that the professors were greatly in favour of granting these degrees, stating as their reason for so doing that it was, on the one hand, fair to the teachers to give them a course in which they would have to study subjects which would bear directly on their future work in life, and that, on the other hand, they would be better teachers for going through such a course. This does not mean that in working for their degree their general education is neglected—indeed, the first part of their four years' course comprises general subjects, while the last part is devoted to pedagogic instruction and practice. I was assured, further, that the students who work for and obtain these degrees in all respects rank, as well formally as in the estimate of the graduates of universities, on an equality with the other students. It is counted as high an honour to take such a degree as any other degree of similar nominal rank. I venture very respectfully, but very strongly, to express the hope that the universities of our country will take this matter of a special degree into their earnest consideration. The granting of such a degree would greatly advance the work of the training colleges. It would be an incentive to the students and encourage the staff, and probably would raise the status of the colleges in general estimation.

In regard to residence at normal and training colleges, it is optional and the practice varies; but it seems universally thought that living at a college, or at a hostel connected with such college, offers a better opportunity to the students for the pursuit of their studies.

Manual Training.

It was suggested to me before I left England that I should find that in all the cities of the United States it was theoretically believed that the training by eye and hand was one of the best methods of teaching, but that, as a matter of fact, the theory broke down in practice. For some weeks my inquiries seemed to lead to this conclusion. Wherever I went I found that the theory as a theory was professed by all educationalists. But for a long time I did not succeed in finding a school where the theory was carried out in full practice. I found that what is done in most schools is the following—the kindergarten is used for the young children, say, under 6, and manual training, so-called, consists, with children from 6 to 14, in using the hand and eye, in painting

from nature, in simple clay modelling, or in making of cardboard models,* while in many places wood workshops are to be found at or connected with the schools to which boys in the 6th, 7th, and 8th grades are sent.

At Chicago, however, I found at the training college presided over by Dr. Dewey at the University, in connection with which there is an elementary school, a genuine attempt being made to carry the theory into practice. They begin with the kindergarten for the babies, and manual training is continued afterwards right through from the first grade to the eighth in a practical way, the work in each grade being of a more advanced character as the upper grades are reached. The manner and extent to which this is carried out may perhaps be understood from an illustration. I attended the lesson in the second grade, and found that the following work was being done. The children were told to think of a man 6 feet 4 inches in height, living entirely by himself on a prairie of America. Having fixed this idea in their imagination, the children were then asked to say what they thought such a man would want. The answers would be various—"clothes," "a house to live in," "a canoe to cross the river in," "a plough to work the land," etc. The teacher then would say: "Let us take the house. What height and size should it be? Ten feet. Very well. Let us design the house." The children, then, are taught to sketch out the designs for a simple house, with walls and roof, windows, and doors, all made to scale, the size being first reduced from feet to inches and then halved. When the designs are completed, they adjourn to the workroom, and cut out and construct the house in wood. Expressing some wonder as to how far this could be done by children of the age of 6 to 8, I was shown into a class where six pieces of wood were produced by six different children, each piece forming part of this house. I brought these specimens away with me. They are very rough, but the model is constructed, and no one would doubt what it was intended for. In doing this work, the children use tools such as a plane, chisel, gouge, and hammer. This is a fair sample of what takes place in all grades in this particular school, except, of course, that as the grade advances the work advances also. Broadly speaking, therefore, it may be said that this school carries out the idea of manual training throughout. The school has not been established very long, and is looked upon as an experiment, but as far as it has gone Dr. Dewey and his teachers are enthusiastically satisfied, and are certain that the idea will shortly be adopted elsewhere.

It is impossible to say what effect this idea will have in practical working. It is admitted that a certain amount of book learning will have to be given up; but the contention is that this loss is more than counterbalanced by the practical nature of the teaching, that the children enjoy it more, pay more attention, grasp the

* The following are notes of my observations in a school in New York of "Manual Training" as I saw it:—

Classes 1 and 2. Next to infants. Folding papers in various forms, copying teachers' drawings.

Class 3. Box making in paper.

Class 4. Use of flat rulers.

Class 5. Bookbinding, i.e., attachment of two cardboards to size of supposed interior.

Class 6. Freehand drawing from objects. Design for pencil box and for article to be made in shops.

Classes 7 and 8. Woodwork from objects with ornamentation, etc.

Classes 6, 7, and 8. Work in shops attached to schools. Forty minutes a week in the shops, and forty minutes more during week of manual work.

work more firmly, and that, above all, they make much more use of the teaching they get than is the case with the children who have the ordinary teaching.

The advocates of the system further maintain that the practical work is not "observation and manual training" alone, but that it involves arithmetic, geography, geology, physiology, etc., and that the knowledge of these subjects is taught, and enjoyably imbibed, while the children are only professedly engaged in manual work. It would be presumption for me to express my opinion in any way when the advocates of the system admit it is only in an experimental stage, but I may perhaps say I quite think we should do well in this country to try the experiment for ourselves, say, in one or two public schools. We should then be able to judge for ourselves whether or no the system should be adopted, and, if so, to what extent. It seems to me that there is enough in the system to justify the experiment.

As to the manual training of girls I need say very little, simply because there does not seem much to learn from America in the matter. The girls, of course, participate in the ordinary eye and hand work of the school and in some few places they are found in the woodwork shops. The girls are also taught "domestic science," which includes cookery and dressmaking. But the teaching is not better than ours, and the Americans do not, it seems, attach so much importance to this branch of education as we do.

Manual training is carried on in many of the high schools, but a good deal of variation in extent is found. Some high schools do not practice it at all. In some it is played with rather than taken seriously. In others it forms a considerable part of the work of the school, while again, in some schools called "trade high schools," it is the main feature of the school. In these trade high schools the principals of the schools do not put on one side the desirability and necessity of giving the student a general education, but the manual training idea pervades the whole course.

It is distinctly stated by nearly all the principals that the object is not to teach the students to be mechanics; they are only taught the principles upon which the work is done. One of the superintendents puts his position thus—"As soon as a student begins to know a particular trade, it is time for him to leave off that trade and to turn to another." Further, the suggestion is strongly pressed that the trade is not taught because it is a trade, but simply because it is the best way of educating the student. It is maintained that the powers of the student are more effectively increased, and his general knowledge improved, if manual work and observation are made use of very largely, than if he were educated in the ordinary way: and, again, the same arguments are used as those referred to in the case of Dr. Dewey's school, namely, that manual training is more attractive and more educational than simple book teaching.

I visited three places in which this idea of trade schools is specially being carried out, viz., Brooklyn (New York), Cambridge, and Chicago. In each case the principal and teachers were enthusiastic in their belief in the system, and were confident that in time it would be universally adopted. My personal feeling is that, although it is not too early to be enthusiastic, it is too early to be certain of the results. There is a great deal to be said in support of the arguments used, and here again, as in the case of manual

training in the elementary schools, I would urge that the system should be tried experimentally in a few schools in England, so that its practical working on English youth could be tested. The ideal experiment would, to my mind, be a grammar school with three sides—ordinary, ordinary and trade mixed, and trade mainly. The students should be of the same general standing, and should have the option as to the side they went to. Thus in process of time a definite conclusion could be arrived at.

Technical Work.

Advanced technical education is found in connection with the university system in America, and is also carried on at local institutions. Cornell University and the Massachusetts Institute of Technology at Boston may be taken as examples. The university and college authorities in places like these attach the greatest importance to this particular kind of work, and, without doubt, the results achieved are of the very utmost importance. Students are persons who, as a rule, have come from high schools, and they at once proceed to the study, both theoretical and practical, of subjects which will have a particular bearing on their future lives. The courses (four years, or longer) both at Cornell and Boston are very complete and thorough, and the diligent and capable student emerges from his studies completely equipped for his particular business or profession. Every student before he leaves has found—if he desires so to do—a situation, as the directors of large establishments throughout the States are very anxious to secure these students. They are appointed to responsible positions, and after they have spent some little time in gaining actual knowledge of the business working of concerns, they (as a rule) take high places in the manufactories in which they are employed. As a practical result, it will be found that hundreds of fully-equipped and well-grounded young men are turned into the businesses of the United States every year.

This is a great advantage to the students themselves, but looked at from a general point of view it is of immense importance to the welfare of the country generally. I believe it will be found that every member of the Mosely Commission will have come back with the same opinion that I have, namely, that England is at a distinct disadvantage when the business aspect of education is considered. Where we turn out ten highly qualified men, they turn out hundreds, and their trade reaps corresponding advantage. Undoubtedly we have in England an advantage which the Americans do not possess in our widely scattered polytechnics and smaller technical institutions; but I am now speaking of the higher grade of technical work, and in this respect we, as far as I can see, are at present a long way behind the States. Of course, this will be no new thing to thoughtful men, and our country is alive, to some extent, to the need of further action. I rejoice to think there is the prospect of a large institution of this character being started in South Kensington, to be carried on in co-operation with the university and colleges doing similar work, but I should like to impress on any one who may read this report that the subject is of the utmost importance and will not brook delay.

Conclusion.

In conclusion, I may recapitulate the suggestions that I would make—

1. Every effort should be made to increase the desire for education on the part of children, parents, and the public generally, and in doing this the endeavour should be made to show the public that better education is essential for the commercial prosperity of our country.

2. The experiment should be tried of carrying on manual training in all standards in one or more elementary schools.

3. A similar experiment should be tried in one or two grammar schools or schools where higher education is carried on.

4. A great effort should be made to increase without delay the number and importance of institutions of university rank at which advanced technical education of the most practical, as well as theoretical, kind should be given.

5. The universities should be asked to consider very seriously whether they cannot institute a degree of education or some degree which will be specially suitable to those preparing for education as their life work.

6. Speaking with great deference to those who have been engaged in the practical work of teaching I would suggest to them whether it is not possible to learn something as to the *method* of teaching in the States.

7. Let us never lose sight of the fact that it is most desirable that those who are responsible for public education should make themselves practically acquainted with the teachers and the children and students in the schools and colleges which they control. No one can fully judge of the requirements of educational work unless he or she has a practical and sympathetic knowledge of details as well as of principles.

A. J. SHEPHEARD.

Mosely Educational Commission.

Report of Mr. A. EDMUND SPENDER, B.A.

TRUANT AND REFORMATORY SCHOOLS.

The investigation of truant and reformatory schools might, at first sight, hardly seem to come within the province of a specially appointed Education Commission, whose chief purpose was to discover how it was that the American individual rose superior to his English cousin in his intellectual productive capacity. There were even critics who felt that in the humblest walks of teaching it would be impossible to derive any advantage, for, as regards the attention given to the Ismaelites, the United States had made the system of the Old Country their pattern.

This is true to a certain extent, but though they had borrowed they had also transformed, and, with that benevolent optimism that is characteristic of the American race, they were eager to return in full measure the debts gained from the experience of others.

In the Transatlantic Republic youth is their creed, and with this end in view they devote a painstaking attention to instructing the young. Until within recent years the unruly class has been somewhat neglected, but to-day, however benumbed may appear the finer traits in the precocious urchin, they recognise the soul-inspiring truth sung many ages since by George Herbert—

“When God at first made man,
Having a glass of blessings standing by;
Let us (said He) pour on him all We can :
Let the world's riches which dispersed lie
Contract into a span.”

Beside the ideal incentive there exists also the practical side in the American's system of dealing with the possibly criminal class. He is confident that it is simpler to discipline the young than to condemn the adult; further, it has this advantage, it provides the hopeful chance that the lad may develop into a respectable and remunerative citizen, whilst (to a corresponding extent) it minimises the unprofitable expense of the maintenance of large State prisons. A certain criminal element will everywhere be an unpleasant factor; oppressive competition, and the reaping of low moral tendencies will produce their victims; but if these tendencies can be removed before vices become habits in those whose daily schools lie in the questionable haunts of the town, a great constructive work will have been accomplished.

This is the accepted view of those sociologists who have a deep regard for the welfare of the Republican race. Their treatment is in no sense stereotyped, and in some instances it would have been easy to have argued against the good judgment of some of their empiric efforts; but as a whole the framework of their ideas is substantial.

They construe the term "reformatory" as the means of raising the tone rather than correcting the offence of an individual. The one duty is to draw up rather than to crush down, to remove the stigma of disgrace rather than brand perpetually, to do away with the helot caste rather than to preserve a group that would always prove a source of danger to the State. Indeed, so strenuous are they to attain this end that in some instances they will not even attach the name of reformatory to any particular institution, and certainly the sound of parental school is more musical to the ear. In another instance a superintendent appealed to his committee to alter the site of their asylum instead of increasing the buildings that occupied the greater part of an islet, on the score that the evident purpose of the founders to isolate the inmates rather served to tempt the offenders to effect escape.

If this may be regarded as a morbid excess of sensibility, it must be fairly remembered that the American is disposed to regard crime in a juvenile offender as more largely due to extraneous influences than to much inherent wickedness.

Questioned as to the general motives that led to the falling into crime, the responses of the superintendents and others were various. A few estimated that an indulgence in cigarette smoking had produced a debilitating effect upon some offenders so that they lacked the power of will and concentration. Others found the desire for sweets or the love of music halls to be a more general cause for the early downfall.

His Honour Judge Mairs, one of the ablest judges that New York possesses, made very outspoken reference in respect of this class of temptation, and blamed the parents who too often deprived their children of the opportunity to appreciate the use of money. The custom that prevails in the United States is to permit the parents to claim all the earnings of their children until their sons have reached the age of 21 and their daughters of 18. There have been noteworthy instances where young fellows who have risen in later life to an honourable reputation have paid a fine to their parents to exempt themselves from handing over their professional earnings.

But these excuses are secondary to the all important fault, that of the lack of parental control. This feature may be intensified in the States on account of the cosmopolitan nature of the poorer inhabitants. Though the Americans possess a faculty for nationalising a foreigner which in many cases amounts to a positive genius, the fact still remains that the hot-blood temperament of the Southern Italian, the dour intelligence of the Polish Jew, and the mundane materialism of the German, all conspire against an easy education in self-respect or general obedience. Again, whilst a recent immigrant may be well disposed in his behaviour, the first struggle in new haunts may be so keen that neither the father nor the mother can afford to stay at home to attend to their children. More than once the writer heard the same excuse, and the plea was genuine, that the father had to hawk whilst the mother found what pittance she could, and so the family only saw each other when, exhausted in the hunt for a living wage, they crowded together in a single room for a feverish sleep.

The United States has so constantly been regarded as the world's mint that surprise has been raised at the mention of existent

poverty; yet New York, Chicago, and the older historic town of Boston possess their array of one and two-roomed dens where perhaps distress is more abject than in England. The surroundings are strange to the newcomers; their tiny fortune has been spent in heavy rents before they have found an occupation, and, though profitable labour is much more easy to obtain, yet there are many who never seem to reach that margin where higher wages more than cover the higher expenditure.

Possibly within a generation a change will be evident when the population becomes more settled. Not many years since the Irishman was the labourer or street ganger; to-day he controls the saloons or politics or more generally both, whilst the Italian has become the mason or the pavior, and presidents and congressmen are face to face with the fact that poverty needs their attention and direction.

Philanthropists have formed the vanguard in the march of reform, but its progress has reached a stage where it is necessary to make demands upon the opulence of public bodies to make the work effective. The measures used for the purpose of reform may be generally summarised under three heads. The first method is one of persuasion, the second of caution, and the third of detention.

The third of these systems corresponds more or less with what is in vogue in Great Britain. The earlier plans deserve a close study since their whole purpose is to check, if possible, the necessity of resorting to the final alternative, removing a child from its parental responsibility and sending it away to some home of refuge.

When persuasion has proved futile the truant school is the next resource. The trouble that is taken to avoid even this step is in itself an evidence of the desire of the Americans that every child should receive a beneficial training. In Boston the administration is so complete that not a single boy or girl can be absent from school for a day if they are under the statutory age of 14 years without inquiry being made as to whether they can provide a valid excuse for staying away. New York can scarcely boast of so complete a daily survey; the influx of alien children is so heavy that the building of a new school every year is insufficient to provide accommodation for these prospective electors. These minuter details necessitate further amplification, so it is enough at this point merely to mention that New York is no less alive than Boston and other cities to the great debt due to the force and influence of the truant officers.

These truant officers who are engaged by the Board of Education are usually men or women especially chosen for their patient tact, persuasive influence, and human sympathy. Each one is responsible for a particular district in the town, and every morning receives from the schools within its area the name of every absentee. These names the officer proceeds to tabulate, after which he visits the home of every defaulting child to discover whether he has been detained by the parent for some household work, or on account of illness, or simply because the mother has failed to exercise her proper authority.

These "flying buttresses" from the great temple of education have an even higher function to perform. By means of their daily visits they become cognisant of the conditions of the houses; they can enlighten their inmates in regard to the laws of health; they

can make them have a horror of squalor and untidiness; and, further, they can detect when children are poorly treated or improperly brought up.

In this last of their duties they are more or less supplanted by the teachers in the kindergartens, who in Boston, at any rate, confine their mornings to teaching in the schools and spend their afternoons in periodically visiting the homes of their pupils. In this manner they become familiar with the parents, and strive to reconcile them to the importance of a good education, in which a wholesome upbringing must play so important a part.

Truant officers act also, in a sense, as missionaries. On several occasions they have discovered in their peripatetic rounds cripples whose infirmity has prevented them from moving outside their wretched homes, and cut them aloof from the bright society of their fellows. These invalids are generally taken in hand by voluntary organisations, chief among which may be counted the excellent Children's Aid Society, which collects the cripples every morning in an omnibus, as is done in some of our biggest English towns, and drives them daily to the schools providing them with a mid-day meal. Trained matrons are also in attendance throughout the school hours to attend to their temporary wants.

But to revert to the truant proper, healthy to all appearances in body and limb, but wilful in mind. A constant cause for truancy is the nagging of a schoolmaster who has taken exception to a particular boy. This is but the necessary corollary of the faulty system that cannot as yet be prevented, namely, the division of the school into recitations or classes of 50 or 60. The fact that the pupils have their different desks makes them more manageable, but there will protrude the patent differences in the sagacity of the scholars, and the dullard, because he cannot receive adequate personal attention, finds the lesson a burden, and revolts.

Americans, however, are now alive to the fact that the dunce may have some physical defect, and imperfect eyesight is a constant cause of backwardness. But so fully do educationalists realise that a defect at this delicate age is capable of being cured, that they are now arranging to have such children medically examined.

When all these precautions are of no avail the truant officer is compelled to adopt more drastic steps, and the young offender is summoned.

The Juvenile Court, over which a justice presides, is perhaps the most valuable piece of machinery recently introduced into the United States. An institution of scorn at its origin, it is to-day respected as the greatest moral force in nipping the germ of crime, and in the promise of reducing the number of penal settlements which form the blight of every nation. By the establishment of these courts the trial of cases in which children are offenders is entirely dissociated from the contamination and publicity of police courts. There is no desire to make the boy too early acquainted with the language and devilry that make men beasts. To eradicate the incipient tendencies rather than to condemn hard-set evils is the object of these courts, and the police authorities strongly uphold the benefits thus derived.

The system that prevails in the United States is that every child must attend school between the ages of 8 and 14 years

without option. During the two years immediately following they must be receiving some instruction or be legitimately employed. Boys who at the age of 14 have failed to pass a proper standard are called upon to attend evening schools for 16 weeks before they have reached their sixteenth year, at which age they are claimed by the State law to have reached the state of manhood. Girls, on the other hand, can be exempted from further study after their fourteenth birthday.

Amongst the legitimate callings for children is that of selling papers, though in some States the restrictions vary in regard to this custom. In New York, for instance, an arrangement is made compelling every boy (girls being entirely excluded from selling) to wear a metal badge embossed with a number on its face and with a card on its back on which is written the boy's own signature, so that the same could be produced when demanded by a constable or educational official. The badge in itself is indirectly a badge of knowledge and of good conduct, for they are presented to the boys through their school authorities, and only to those that have passed a satisfactory standard. A stage further is also reached by this system, which prevents the boy from making his nightly cents without the approval of his parents or guardians. After application for a permit is made in the spring, every pupil is informed that he must bring the written consent of his elders before a certain date. Without digressing to any extent, the writer, whilst on the whole endorsing the honest endeavour to raise newsvendors to a higher status, feels that the principle is not without its drawbacks. The poorest boy often has no one who will consider himself or herself responsible for the lad, although this evil is mitigated by the excellent homes established for these Ishmaelites, where it is even possible for the lad to receive sufficient teaching to equip himself for the qualification. Secondly, it may induce parents to sweat their sons for the purpose of their own profit. The badge is not in vogue throughout the States, and the grudge that the boys sometimes have against it is illustrated by the remark of one who had fastened his badge on to his braces under his coat, that it did not pay because everyone stopped him selling so as to look at the badge!

In the main, however, they save a deal of administrative trouble, and the work in the juvenile court is quite ample without boys being brought up who have no technical right to be selling in the streets. There are in attendance at the children's court at New York on behalf of the Board of Education 68 officers, of whom ten look after the offenders from the high schools, and the remainder watch the cases from the elementary schools. Ten more, however, are shortly to be appointed to take charge of the refractory at the night schools.

The writer, through the courtesy of His Honour Judge Mairs, was privileged on two occasions to scrutinise closely the working of the court from the bench. The public were not admitted, only those who were parents of offenders or who were witnesses in a case that was pending being allowed seats at the back of the hall. Oaths were administered even to the culprits, who were generally half in tears and in a penitent mood, though even the stern features of the reproving justice were relaxed when a coal-black, woolly-haired, ivory-teethed negro came up grinning. He had mildly erred, so a paternal reprimand was sufficient.

The word paternal exactly conveys the judge's demeanour towards the defaulter; the success or failure of this system almost entirely depends upon this uncertain quantity, this human balancing of the promptings and weaknesses common to every child in the lower orders. A heavy penalty would make them mutinous; a mistaken leniency would train them in the first shuffling steps of crime. Firmness without harshness is the necessary attribute of this Solomon; to repress but not to destroy is his function, to stimulate but not to let self-respect run riot is his object.

The task is no easy one, for the spirit of lying is rampant, and oftentimes the worst fallacies seem to possess the greater truth, but after awhile the judge becomes an adept in detecting the flaws, and the grudging confession has even been the instrument for putting an end to a wholesale number of misdemeanours. As an illustration, Judge Tuthill, of Milwaukee, related to the writer how two boys had been brought before him for stealing coal, and they admitted that they were only members of an organised gang. The judge advised them to tell their comrades to come and voluntarily give up their names. During the course of a week about two dozen lads candidly stated that they had been implicated in the same pilfering, the origin of which apparently lay in a desire to have a collection of marbles. Each lad was reprimanded in turn and was made sensible of the danger that he was incurring by such larceny. To make the child sensible of his fault is the chief object of these courts, and not so much to punish. For instance, a lad was brought before Judge Mairs for shouting in the streets, and waking up a policeman. "Disturbing a policeman's sleep?" exclaimed his lordship, "why, what a terrible offence!" The boy went home thinking it necessary to be more discreet in the future, and the constable in charge was humoured by the amusing criticism. A girl was reproved for using bad language and showing ill-temper towards her mother. Here was an opportunity for a little paternal rebuke, pointing out to the girl how she was dependent upon her mother, and how the latter had spent so much time and trouble in bringing her up. At the close the girl promised to be well behaved for at least three weeks, otherwise she was told that she would have to be sent to a reformatory school. Another boy for throwing stones in the streets was ordered to be shown a cell, and when he was brought back before the judge, he was asked if he would like to be placed in it. The place had its terrors for the lad, and he was allowed to return to his parents determined to give less trouble to his neighbours. Another, sheepish at first, was addressed as follows by the judge: "Come a little nearer, my lad. Now look up and be a man; I always like to look a fellow in the face. You've been a bad boy, a very bad boy, and given your poor old father a lot of sorrow. Now just you go home and see what you can do to make him happy, and you must come and see me once a week, and tell me if you have been a good boy during the interval." In other cases, however, the lad is not given the chance of returning home. If the truant officers give an unfavourable report of his home surroundings, the judge may send the boy or girl off to a truant school if the offence has been absence from school, or to a reformatory if the case requires a longer separation from the family. Until May of the present year, a child could only be detained at a truant

school during the ordinary school session which ends in July, and is followed by a two months' vacation. This was found to have great drawbacks, as there were frequent occasions when the erring scholar was unable to reap any permanent benefit from a too short stay. In addition to this, it was felt that the vacation season was a very favourable period for keeping boys at the truant schools, as they generally spent a good deal of time in the open and under healthier conditions than they would have to endure at home. This drawback is now obviated by a new rule which permits the sentence to run on continuously and so saves the unpleasant necessity of re-commitment. The judge of the juvenile court can sentence a truant without requiring the consent of the parents or guardian, but when the truant is committed by the authority of the Board of Education the written consent is always applied for, failing which, the parents are committed and fined for non-compliance with the regulations.

The great difficulty that is experienced in these courts is the variety of nationalities; interpreters, therefore, have to be provided, in order that the parents attending may understand the full reason why their child has been brought into court. It is, however, generally found that one of the parents is able to interpret on the other's behalf, thus revealing the number of mixed marriages that take place in these poorer neighbourhoods.

Prior to their examination the children are kept in fair sized rooms above the court, where they are allowed to talk quietly, but are kept properly under control. The infants are placed in a separate nursery, under proper charge, so that their little wants may be attended to. As many as 7,447 children were arraigned in one year at the City of New York Juvenile Court, of whom the greater part were Russian Jews from Roumania. The Italians were the most difficult to keep in hand, but, whilst there were a few Germans, there were neither French nor Scotch, and the proportion of the United States boy proper was also a low one. The offences may be classified under four heads:—

1. Acts purely mischievous, not involving moral turpitude, but violating the laws of public convenience, such as playing games in the thoroughfares.

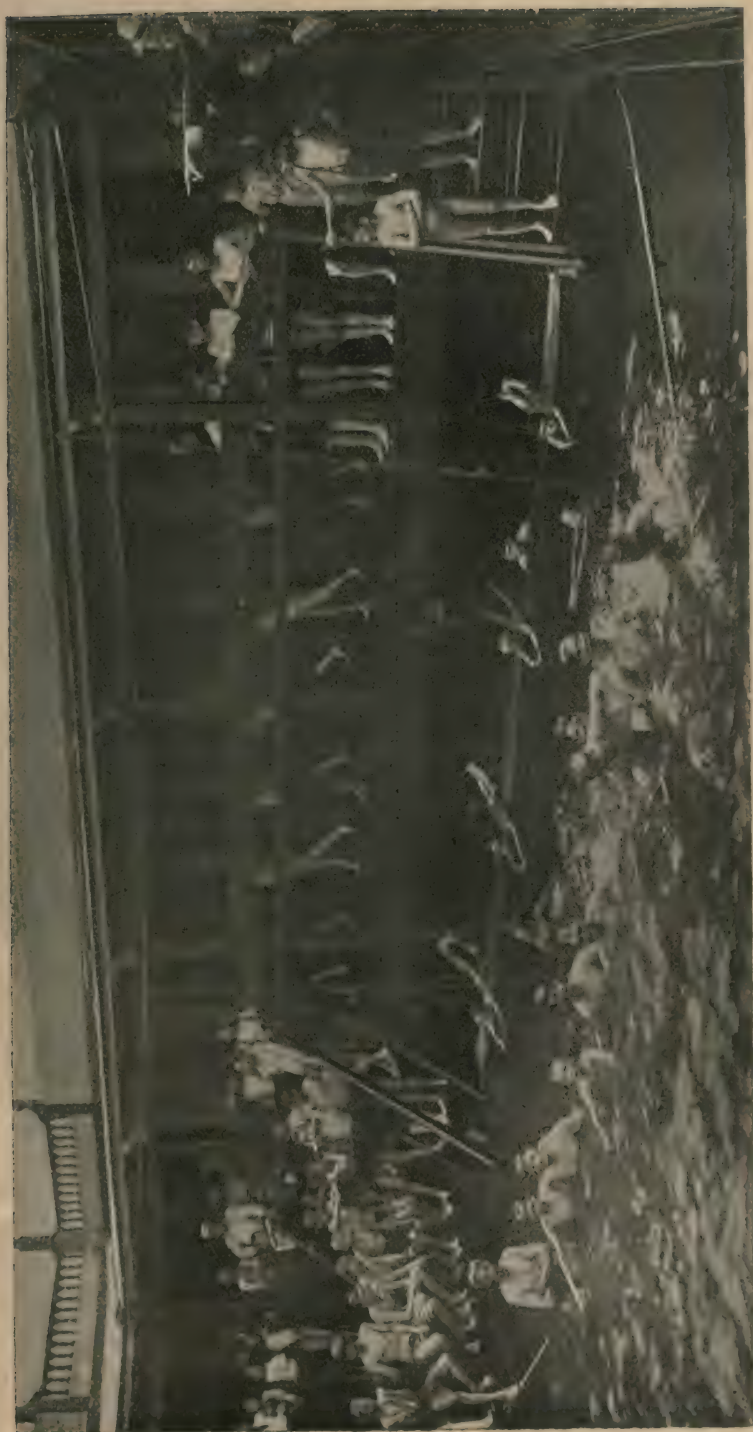
2. Crime committed for the first time as the result of temptation, generally concluding with a verdict on the parole system.

3. Acts involving criminal tendencies, such as the committing of arson.

4. Acts of parental neglect or abuse; but if a case of legitimate poverty in which the parents through the misfortunes of circumstances have been unable to obtain a sufficient return for a livelihood, the children are generally handed over to the Department of Charities to be detained in the scattered homes.

Occasionally a case is deferred in order that further investigation may be made by the parole officers or through the Society for the Prevention of Cruelty to Children, which has a strong establishment in the United States founded on lines identical with the society in England.

To be precise in our definitions we ought to dispose of the special schools which come under our supervision into four heads, the truant schools, the schools for dependents, the scattered homes,



A BOYS' PUBLIC SCHOOL SWIMMING CLASS.



and the reformatories, though between the second and third cases the differences are scarcely perceptible. Under the fourth head there is established the George Junior Republic at Freeville and Annapolis Junction, institutions which are so unique that we shall deal with them at the close of this report.

The State of New York possesses two truant schools proper, differing largely, because whilst one is established on the outskirts of Brooklyn, the other is situated in the crowded surroundings of the city itself, a position, perhaps, of not such vital importance in regard to truancy, but still not altogether desirable in striving to change the dull habits of the young individual. A lad does not play the truant simply because his teacher has made a dead-set against him, or because of his own unpopularity, for endeavours have been made to send him to a school in a fresh district, no matter how great the distance, so that he may have the chance of fresh interests and new companions. The failure still showing itself, the boy is planted in fields beyond the dismal sidewalks of the city, that out of the trees and open fields he may acquire the knowledge of true nature and throw off a demoralising impassiveness.

The maintenance of Brooklyn Truant School was originally in the hands of seven aldermen or trustees, but is now dependent upon the Board of Education, which pays for the expenses out of a special school fund. The current outlay is left to the superintendent, who is obliged to state his requirements six weeks in advance, and there is a cumbersome system by which every bill has to be passed by 20 persons before the City Paymaster is allowed to settle the debt.

All the teachers must be over 21 years of age and have gained a certificate at the Civil Service examination, or they may be more especially chosen on account of their tact. Their pay is slightly in excess of what they would usually receive at a primary school. The superintendent generally receives a commencing salary of 900dols., rising by 100dols. per annum until it has reached 1,200dols. Though not under the control of the courts, he is allowed a policeman's badge and authority to arrest and bring back boys who have escaped.

Drill forms a very general part in all correctional schools, and a uniform is the obvious consequence—not to emphasise the offence, but to instil into the individual the idea of discipline and social unity. One and a half hour's parade seems to be the daily average, the marching being varied by rifle practice, and dumb-bells or physical drill. Every boy is medically examined on arrival, so that his physical development may from time to time be recorded.

For punishment corporal infliction is forbidden in some States, but sufficient incentives for good order are supplied by the different rewards, chief among which is that the detention of truants is dependent upon good behaviour. In some instances special delicacies at table are allowed for good conduct. There are even tables of different degrees, at the lowest of which bread and water may alone be served. A somewhat dubious penalty is the placing of an offender in a semi-dark room, through the windows of which he can hear the merry shouts of his comrades at football or baseball, and in a chamber which is bare beyond the necessities of life, unless adorned with moral texts. Other rewards are in the shape

of an honour roll list, which is posted weekly, and enables a boy, after his name has appeared on the board, to gain a badge of blue ribbon, the possession of which has the corresponding advantage of shortening the detention, for, notwithstanding the fact that many carp at the readiness of some parents to get rid of the care of their children, a certain stigma is felt, whilst the boy on his part dislikes the restraint and the separation from his family, except for the monthly visits that he is allowed to receive and the monthly communication that he is permitted to send. His detention is indeterminate, so a boy quickly becomes reconciled to the necessity of keeping on his good behaviour, and whilst he is at school he undoubtedly receives a permanent improvement, for if he is backward the lesson is made so interesting that his distaste for knowledge is overcome, or if he is physically weak the more open surroundings and the chance of gardening develop his body. Every encouragement is given to the boys to tend the horses or pigs, or failing these to cultivate an affection for the house dogs or cats. One superintendent was so insistent on the efficacy of these collateral aids, that he urged that every boy should be allowed his own garden and his own pet. When a boy shows ultimately a better disposition, the superintendent reports to the City Superintendent of the Board of Education, and if he is satisfied with the report it is passed on to the Judge of the Juvenile Courts, who gives his approval for the boy's removal to his home. For some weeks he remains on parole, and if he fails he returns to the institution.

Whether truant, parental, or penal, the writer found that the same ideas prevailed in regard to the system of housing. The old "barrack" principle has been put under a ban, whilst the "cottage" plan is being everywhere introduced. The superintendent of the Chicago Parental School writes in his report for 1902: "While the initial cost of reforming boys or girls under the cottage system is a little greater than under the old plan, it is cheaper in the end, since a larger number are reformed and the work is more thorough and lasting."

The system is in keeping with the forward ideas of Americans, not to deaden by institutional training, but to regenerate through the family idea. The old conditions are still in existence in the States, and the writer was so imbued with the new spirit that pervades the American reformers that he came away depressed from such institutions as the House of Reformation, New York, and the John Worthy School, Chicago. In spite of the excellence of those who supervise these great barrack buildings it would be easy to find fault, had not the Americans themselves stifled criticism by admitting the flaws and already determined to provide new buildings as soon as new houses could be erected. Expense is not considered when a rotten manhood can be prevented and an honoured citizen can be matured.

As each cottage possesses its own master and matron the personal equation plays a large part in the evolution of reform, and because boys of a criminal tendency require narrower watching, it is possible to give them greater liberty when their training corresponds rather to that of a family than of a regiment. Hygienically the cottage system is a natural safeguard, for whenever infection occurs it can be the more easily stamped out.

On entry particular attention is now given to the physique of the boy. At the Lyman School, Roxbury, two elaborate charts have been prepared. The first goes into his family history, and gives the vicinity from which his parents hail, also their habits in the past. Further details relate to his school, daily and on Sunday, and refer to the number of commitments before the court, and the names of the judges trying the cases. The latter part of the record, obtained from the boy's own confession, states his work, play, ambition, and personal habits, such as lying, smoking, drinking, disobedience, truancy, and theft. It also contains some valuable accessory questions, as the number in the gang with which the boy has been associating, their meeting place, initiation, purpose, and leader's name, with general concluding remarks.

On the back of the card a character study is prepared first under the head of "general," such as, trustworthy, deceitful; shrewd, indiscreet; genial, distant; bashful, impudent; imitative, precocious. The other main heads are sanguine, such as buoyant, ready; choleric, such as prompt, responsive, hasty; sentimental, such as emotional, religious, secretive; and phlegmatic, such as sheepish, backward, and depressed.

A second chart enters into elaborate details of height, whether normal or abnormal, and the shape, weight, height or balance of the boy's various anatomical parts, such as head, hands, mouth and hair. These physical tests are attended to in America even up to the time that a young fellow goes to the university, so much are its educationists impressed with the importance of Juvenal's aspiration, "*Sit mens sana in corpore sano.*"

Referring to the urgency for a systematic physical training, the superintendent of the Chicago Parental School remarks: "Improvement in the class-room has frequently been coincident with marked physical advancement, but such cases (anæmic and undersized) cannot receive improvement proportionate to their need under the present system of class instruction only. Believing that the near future will demand such instruction, a special class for those physically defective has just been started . . . A school which has an avowed purpose of restoring the truant to normal conditions leaves something undone, until it sends him from the school with a sound body." Therefore, in America, no reform institution is considered to be satisfactory until it has been provided with a gymnasium and swimming tank or at least shower-baths. In some cases, artificial ponds are constructed by the members themselves, suitable for natatory purposes in the summer.

Manual training forms almost the principal branch in these schools, "the object being, not the teaching of a trade, but the development of thought expression, muscular control, and habits of order, neatness, accuracy and truth." In the actual reformatory schools the carpentering, shoe-making and forging would have a more ulterior motive, as the lads are retained until some definite occupation is found for them. Usually the percentage of lads who find their bent in an agricultural life is not large, although every inducement is offered to them in the way of a dairy and of tilling the fields. From the towns they have been reared, and to the towns their desires lead them back. Wherever this is the case, the officials take steps to find places for their pupils in new towns if the

report of their parental home has been described as undesirable, and the authorities aim at possessing their own lodging houses, when sufficient capital has been raised, where the boys can settle in at the start until they are able to shift for themselves. They are liberally dealt with, often being provided with an adequate set of tools to enable them to start on equal terms with those who have had the education of home influence. This provision is sometimes made through the active interest of the auxiliary committee consisting of ladies who periodically visit the school. They also sustain an enthusiasm amongst a large circle of friends to subscribe to or organise bazaars or sales of work.

The authorities, however, are anxious to be able to rely upon a surer reward for industry, and are hopeful that commercial firms will offer scholarships to those who have successfully passed their apprenticeship at school.

There is no exaggeration in this statement, for at several institutions the boys, under the supervision of a single foreman, were building a hospital or fresh houses on foundations which had previously been prepared. The Sloyd system, however, produces the chief fascination; nearly everywhere it is taught, and, though one might grudge the fact that the time thus monopolised was not spent in objects of greater practical value, there is no doubt that the teachers have found it to be an irresistible attraction to boys who would submit to no other form of discipline. To continue a quotation just previously inserted, the superintendent adds to his report that "there is no question that manual labour is a potent factor in the correction of truant and wayward habits. The boy's interest is aroused, the power of attention is developed, accuracy is enforced, and the creative instinct receives a powerful impulse." The happy combination of manual with class work gives the pupil an added zest to learn. For instance, if he is a shoemaker, his sums will deal with hides and soles; if a carpenter, his multiplication will tackle forests and beams, and the measurement of windows or doors; or if he digs on the farm, his figures will deal with horses and oats. In this manner the lad traces the close connection between his lessons and the daily routine of life. "The boys become so interested in the manual work that it is a punishment to keep them away from the shop."

At the Chicago Parental School we again find a definite horticultural class. "With a favourable season we can easily grow 3,000dols. worth of stuff annually in our garden . . . under the supervision of the teacher and a trained horticulturist and professional gardener. There were 98 boys here all summer, and they cultivated six acres of land. The land was divided into plots, a tenth of an acre being assigned to one or two boys according to their age. On these plots various kinds of vegetables were grown, and in this way a knowledge of the different kinds of plants was imparted, and the spirit of emulation and co-operation was developed." But this practical effort would have been only partially successful had the two months' previous instruction been omitted. At these preliminary classes the lads became acquainted with the different seeds, and the nature of the growth of potatoes, beans, etc. On the window-sills would be seen saucers with sprouted seeds growing in water under a piece of glass with knots

of cotton around the root. These specimens served to demonstrate the speed of their growth. We can imagine how a new world was thus revealed to boys who had emanated from some dark and noisome slum.

The classes in freehand drawing and metal work design have attained to a high state of efficiency at the House of Refuge in New York. Every boy on entry goes through a probation of the simpler designs, and the writer was informed that in nearly every case the benefit therefrom was immediate. Clumsy might be the result, but the student having done nothing all his life except acquire the habit of loafing, became newly conscious that he was a producer, and the imperfections of his early work did not daunt him, because the hope of new achievements outweighed the mediocrity of his accomplishments. Some there are, however, who show quite exceptional skill, and one student originated a capitally bold design on the blackboard, using both hands at the same time. Whenever any talent is evident the ambidextrous method is encouraged, as exercising more of the mental powers. In the turning and lathe room, an Italian boy had drawn complete original designs for the erection of a church, and even the heating apparatus had been considered.

Printing is another favourite occupation; the annual reports and circulars are generally printed at the institutions, thus reducing the expense of the outlay. Places are generally found for the lads after a satisfactory probation at some newspaper office or jobbing printer in some local town. The Americans are liberal in the use of their blackboard, and in one of these instructional classes the arrangement of the "case" has been drawn out in chalk so that the boys could the more quickly pick out the position of the letters.

Bands also form a very popular feature, and when the players are well-behaved they not unseeldom find their way into the bands of one of the services. Learning music by ear is also enjoyed by many classes, especially when the songs have a patriotic refrain. Loyalty is fostered by every means, and every week they are marshalled in their schoolroom with the colours in front, that with the uplifted hand they may accustom themselves to swear allegiance to the Stars and Stripes.

Boys are further stimulated to feel that though they are for the moment not in the world, they are none the less of the world. In some instances they print school newspapers made up of interesting cuttings from the daily papers. The writer was sometimes beset with questions relating to European events, Great Britain receiving the keenest attention. Where a paper is not printed the superintendent may write on a board in the hall any wholesome information culled from the journals at his disposal, and sometimes the teacher will carry out this practice in her class-room, so that the pupils are fairly well informed of what is happening.

The writer was much struck with the number of excellent engravings which were hung on the walls of the institutions, noticeably at the Lyman School, and he was the more astonished when he found that a plebiscite had given the first place to the picture of "Christ Teaching among the Doctors." The "Angelus," "Sheep Lost in a Storm," "Horses at a Trough," were next in their sequence of favour. Pictures, especially if they are coloured, have

an important influence in reforming the turbulent character ; scenes representing youth and action are the more easily understood, and the railway and steamship companies have in many instances rendered a permanent influence upon the lads by presenting their plates of snorting engines, or of vessels pounding through the trough of a storm. The Madonna's head had also gained great favour, but as many of the Lyman students were Irish, this appreciation may have been in part the result of their religious training, for every Sunday any denomination which can provide a minister is allowed to hold a special service for the children of its own persuasion, and those who perform the offices are invariably warmly welcomed by those who are anxious to teach.

Religious teaching, however, is not the only instrument upon which American reformers depend for the evolution of a sound moral disposition. In several institutions the older boys are set to the task of self-government, and the principal features are sufficiently novel to capture the fancy of the young fellows. At the Lyman School the highest class was under the charge of a lady teacher, but the boys were permitted by her to discipline themselves. As a consequence, her duty of keeping order was in no sense arduous. A boy who misbehaved realised that he would have to submit himself before his comrades. A disciplinary committee of three is chosen each month by ballot amongst the class, and the judges, as soon as they have been appointed, try every misdemeanour by making careful inquiry into each case. The skeleton of a large tree is chalked on the blackboard, springing from three roots, on the face of which are written the three ideals of Purity, Truth, and Courage. The report of every member of the class is investigated, and if it is proved to be satisfactory his name is placed on one of the branches of the tree ; there it remains for a month, when a fresh inquiry is held. But should boys have been proved delinquents in one of the three virtues required of them, their names are written on a grave drawn in the earth, and for a month they are exposed to the obloquy of being publicly known to have failed in the estimation of their own self-appointed comrades to have reached the necessary standard of uprightness. An offence is often pardoned if a lad confesses his fault to the committee before they have received information of the same, and it at any rate saves him from having his name removed from the branch of honour. The penalty is fixed by the consultant committee, and sometimes it is arranged that another boy should watch the offender for a certain length of time ; if, at the end, he can give a satisfactory report of his comrade, the fault is pardoned. By the side of the tree is drawn the outline of a large book which, in some ways, resembles the front pages of a family Bible. Within this space are written the names of those who have left the school with the distinction of their names appearing on the tree of honour at their departure. This list is retained unaltered for a year before it is erased for the names of fresh candidates.

This theory of the value of self-government is carried out much more elaborately in the institutions known as the George Junior Republic. These schools have only been established a short time ; the first of them was opened at Freerville, some few hours from New York, by a Mr. William George, who exercised a marvellous influence over

boys and girls of a somewhat criminal type. For the sake of greater accuracy the writer will confine his few remarks to the National Junior Republic which he visited near Annapolis Junction near Washington.

There was one central house of two stories, built of wood. About 60 boys had been sent by the magistrates, and as soon as they arrived they were given to understand that they were members of a little commonwealth of their own, in which, if they behaved themselves, they could have as great a voice as any other member. Two brothers, Messrs. W. and F. Sharpe, exercised a sort of deliberative control when the judgment of the boys might provoke unfortunate consequences, but, as a general rule, it was seldom necessary for them to interfere, and they were thus the better able to look after the provisioning of the camp, and to counsel the boys as step-fathers.

On arrival, a boy is introduced to his comrades, and handed over to their charge: they explain the situation to him and show him what will be his duties. Every fresh suit or new pair of boots he will be obliged to purchase with the nominal coinage of the Republic, and such wealth is the reward simply for daily labour. The writer was amused when he first reached the farm after an evening tramp. He asked a few of the boys, who happened to be resting in the evening, whether they would care for some biscuits, but his offer was declined on the ground that the citizens had no money in their pockets to pay. Each week they must contribute 25 cents, in real coinage equal to one shilling, towards the State, and they thereby gain the right to vote as a citizen for president, who is chosen every six months by ballot. His position is one of importance; to him belongs the right of electing the vice-president, who takes the chair at all meetings, and he also nominates the secretary of state, the judge, the court crier, and even the police officials. The power of this executive is not merely nominal; every week a court is held at which the jury are sworn and also the witnesses before they give their evidence. The prisoner is allowed an associate as his counsel, and it was amusing to hear the skilful manner in which some of these professional juniors argued the case on a defendant's behalf, sometimes prevailing on the jury to acquit the case. The punishments are various, but all entail a deprivation of citizenship until the sentence is completed—plainer fare at meals, wearing prison garb, and even sleeping in the amateur gaol until the penalty is condoned.

Laws are made by the republic in general council, and the secretary of state presents those favourably considered to the president for his signature and approval. The president is relieved of all work, and merely exercises a tacit supervision to see that law and order are maintained throughout the estate. His reward for the honour achieved is a dollar a day in the commonwealth coinage, and his ministers receive grants in minor proportions. In some institutions such money as the individual might have to his account on his departure is allowed to him in the actual coinage to enable him to make a better start.

Altogether these experiments, which met with a somewhat dubious reception from the public generally when they were first initiated, are being increased, and the magistrates are encouraging the movement by ordering boys to be sent to them. To a large extent they

correspond to industrial homes where the distances that separate them from the towns serve as walls without making boys dream of a prison restraint. How far the experiment could be tried in England with equal effect is a matter upon which one can scarcely premise, but the writer, with his knowledge of boys of this class, is not convinced that the English boy would have the same faculty for initiative.

The most serious question in regard to all reformatory work is, what becomes of the boys on leaving the school? Every year in the United States it is realised that there can be no final satisfaction until this problem has been definitely settled. When America has found an answer England will still have only half solved the urgent question, for in the States there lie innumerable acres waiting for the tiller, where homesteads can be established and industries commenced for satisfying the wants of those who first arrived. That is the process by which so many towns have their early start. At the Lyman school the writer was informed that over 75 per cent. of those who had left were doing well; a few were lost sight of, and a few were to be found in other institutions. Probation officers are appointed who keep in touch with the lads until they are 21 years old, as up to that age the reformatories are more or less responsible for their actions. The trustees of the school, who hold their office for five years, investigate each case, and consider the reports of the lad on admission more or less in regard to the surroundings of his home. Great pressure is brought upon them by friends to allow the boy to return to his home, and they are generally ready to do so if there is a fair chance of his living there steadily. For at times it is possible for the lad to have a transforming influence upon his family, and persuade them not only to live cleaner, but to be healthier in their daily habits. But should one of the parents have re-married, it is generally felt advisable to find a fresh home, if possible, on some farm. Three probationers are employed, whose sole duty is to visit every lad on parole, and also to keep in touch by correspondence. At the first their visits are fairly frequent, but, as a boy settles down, instead of once a month the boy may be seen not more than twice a year. There are always a few who find their way into the navy or the army, either as apprentices or as combatants, and several of them develop very satisfactorily. The superintendent of the Parental School, West Roxbury, stated that he had no difficulty in finding places for the boys, in fact, he had only once been refused. This was, however, an exceptional case, as the employer was a jeweller, and he required a lad whose home influence was good. The superintendent added a curious remark, that it was difficult to find employment for the boys in the summer; the explanation lay in the fact that the two months enjoyed in holiday by the school boys led to a greater number of applicants for casual work. As a rule, the superintendents endeavoured to find a place for their pupils in places where they could have a chance of promotion.

In one of the prominent primary schools the following strange quotation is hung from a wall: "We do not give boys a training as if we believed in their nobler nature. We scarce educate their bodies." The intention, at the time when it was hung, was to

emphasise the importance of physical as well as intellectual training, but if we were to pretend that the pith of the meaning was hidden in the first sentence, we must at the least acquit those, who have made the quasi-criminal class their special study, of the charge of having neglected the finer characteristics of youth. They go forth on their mission of reform with a full confidence that they can redeem the ninety-and-nine per cent., and the lessons that England has to learn from her Transatlantic neighbour are, first, the importance of dissociating the inquiry into the delinquencies of the children from the trial of those whose appearance in the police court forms a regular feature of their daily life; secondly, certain magistrates should be especially set aside to adjudge on those cases, and to regard themselves not so much as administrators of the law as foster-fathers to bring the wayward errants to their senses, and parents to a proper idea of their own responsibility; finally, English educational committees should exert themselves to alter the perfunctory barrack discipline that is too often in vogue in our reformatory schools, since it tends to demoralise rather than to regenerate an impressionable boy. They should also have a care to appoint as superintendents those whose tone is such that their private life is a silent testimony that to live truly is to live well.

A. EDMUND SPENDER.

Mosely Educational Commission.

Report of Councillor JOHN WHITBURN, of the Newcastle-upon-Tyne Education Committee.

It has been fitly remarked that the work of education constitutes the chief concern of the American people. In order to understand why this is so, and in order that one may rightly appreciate the great efforts which are being made to approximate, as nearly as possible, to a perfect educational system, it is necessary first to understand the nation's aspirations and requirements in this respect. The American people are essentially democratic, and in no other department of their public business is there so much attention paid to the expression of public opinion. Upon entering a grade school in the United States one is immediately brought into contact with the great problem which the nation is called upon to solve; for here are gathered together the children of people of all nationalities. The educational policy has been such as to favour the adoption of all measures calculated to lead to the rapid assimilation of these children, to eradicate their marked racial characteristics, and to turn them, ultimately, into typical American citizens. I have visited very many classes in all sorts of schools, colleges, and universities, in which but a very small proportion of the children bore English names. The children appear to be intensely patriotic, and to appreciate in a very intelligent and remarkable manner the political and social freedom which they enjoy, and the great advantages of the public school system.

The whole people appear to regard the children as the nation's best asset, whilst the children themselves appear to be animated with the desire to cultivate their powers to the fullest possible extent, because they realise that they can only hope to occupy such positions in life as their education has fitted them to fill with credit. One sees but very few children in American schools who are not well dressed and, apparently, very well fed.* They are generally taller and heavier than British children of the same ages. In every school great attention is paid to physical training, and no effort or expense is spared to obtain the best equipment for the gymnasium.

It should be clearly born in mind that "class" distinctions, as we know them, do not exist in the United States. The children of all the people have the right to a free public school education extending over a period of twelve years. From the age of 5 or 6, to the age of 14 or 15 (and in some States 16), attendance at the primary schools is compulsory. All the school apparatus, including books, slates, pencils, etc., is provided out of public funds. From its first entry into the kindergarten (which is the only infant school

* It is customary in America for the children to sit at table to take their meals with the adult members of the family. All appear to eat very much more food than is usual in Great Britain.



A MIXED SCHOOL (BOYS AND GIRLS) PHYSICAL CULTURE CLASS.

in America), the child is taught to use its reasoning faculties as well as its hands. Although the kindergarten does not aim at instruction in the ordinary way, the child learns much, for there is hardly any place in the whole educational curriculum where in the same space of time the child obtains, incidentally, as much and as valuable information as he acquires during his year in the kindergarten. The universal testimony of the teachers is to the effect that the kindergarten children are neater, cleaner, more orderly, more industrious, more persevering, more painstaking, more self-reliant, and more self-helpful than are the other children. They obey more quickly, are more gentle towards each other, are less self-conscious, and become more enthusiastic in the pursuit of learning. The hand is made deft through play, the songs enrich the vocabulary of the child, whilst the play with the building blocks develops the idea of number. The kindergarten motto of "learning by doing" has now become the chief characteristic in the educational system of America. The teaching of "civics" and of manual and mechanical training begins in the infant stage.

In the American school system the eight years of primary school education are generally divided into what are known as the "elementary grades," covering the first four years, and the "grammar school" grades, which cover the latter four years of the course.

Fully 92 per cent. of all the teachers in the primary schools are females. The average number of children in each class is from 25 to 30 in the kindergarten, from 40 to 50 in the elementary grades, and from 35 to 40 in the high school classes. In the manual training classes the average attendance varies between 30 to 50 pupils for each subject taken, whilst the instructors vary in number with the character of the work which is being undertaken.

The children in the primary grades display a high degree of intelligence, and in every school I visited I was strongly impressed with the fact that they thoroughly understood what they had been taught in the various subjects.

The public schools have undoubtedly reached a high degree of efficiency. I believe this is the result of a combination of factors and circumstances rather than the result of any one cause. From its earliest years the American child is required to make an effort to learn something. He is soon aware of the fact that he is an American citizen, and that by his own efforts he may reach any position. The comparatively small number of children in each class enables the teacher to maintain better order and discipline, and at the same time pay much more attention to the development of the individual power of each child. Professor Edmund James, of the North-Western University, attributes the success of the public schools to the fact that they have in "every town a superintendent of schools who is invested with a large scope of authority and initiative, independent of the State and of the educational hierarchy; independent of supervisors; and independent also of the community after he has once acquired their confidence, an independence and power of initiative which are oftentimes neglected or used to bad purpose, but which, on the other hand, have become the source of some of the remarkable advances which our school system has made." Whatever advantages belong to the system of vesting so much power in the hands of one man in American cities, I am convinced that

the system is not such as we could imitate with advantage in this country. The American city superintendents of education are enthusiastic educationalists, but so are the whole of the class teachers and school principals.

I was greatly impressed with the remarkable interest in their work, and in the children, displayed by the teachers in every department of every school I visited.

The whole system of American education is based upon the idea of fitting the children for the performance of some useful work in their future life. The very ideals of the children seem to differ from those held in this country. The American child never appears to desire a life of ease and pleasure, but he seems to take it for granted that he must prepare himself for a good deal of hard work in his future life. He soon makes up his mind what his future profession is going to be, and before he has passed through the grammar grades he has already begun to pay special attention to those studies which will fit him for his future career.

One sees but few children in the streets or factories in the United States. The average attendance of those who are enrolled as pupils is very high indeed. In 1902 in Dayton it was 90.9 per cent., and in Indianapolis 93.9 per cent. In Chicago the percentage of attendance is exactly the same as in Indianapolis. In Boston and Brookline practically all the children between 7 and 14 attend school.

There are several unique features in connection with American educational enterprise which contribute very materially to the success of the public schools. The free lectures which are given in the city of New York, under the auspices of the Board of Education and of the Natural History Society, are very valuable. Last year the School Board secured an appropriation of £35,000 for this purpose. The lectures are illustrated by stereopticon views, which attract large numbers of all sorts and conditions of people. The courses of lectures are most excellent and combine amusement with instruction. Last year no less than 1,204,126 people attended the 4,221 lectures which were given in New York City alone.

The great interest which the people generally take in educational affairs is shown by the manner in which personal assistance is so often rendered to the public schools. In large numbers of instances one is told that many of the pictures, statuettes, and pieces of furniture, etc., have been given by someone who is interested in the school. Children often give concerts, for which a small charge is made, and the proceeds used for the purchase of some article of school furniture, or apparatus, or of books for the school library.

The public libraries are utilised to help forward the work of education. Whatever may be the nature of the study which is being pursued, whether in primary, secondary, or evening schools, boxes containing a number of copies of a standard work upon the subject are invariably to be loaned from the public library. There is the evidence of thoroughness about all that is done, and it accords with the American spirit that everything possible should be known about the subject under consideration.

The newer school buildings in America are exceedingly good, being all that could be desired, and in most places they appear to have been erected at a much less cost than similar schools in England.

The High School System.

I am profoundly convinced of the fact that what has contributed perhaps more than anything else to make the American people so successful industrially and commercially is the intensely democratic character of their educational system. The next most important factor is the eminently practical and useful character of the instruction which is given in all their educational institutions. The American ideal is to produce the most capable citizen, the person who can "do things," rather than the cultured gentleman of leisure. The American educationalist must seek to elevate the whole people. A superficial glance would lead one to suppose that the whole people were concerned only about material progress and their personal benefit. I may observe in passing that I believe the American people generally are less materialistic than are the British people, and that what is mistaken for materialism is more often the recognition of the necessity for the individual living by honourable labour, and the intense desire which seems to prevail everywhere to cultivate one's powers to the utmost. The practical character of the education has the effect of qualifying the children of the most well-to-do people to earn their living. The son or daughter of the millionaire or the professional man receives the same practical education as the child of the poorest, and loss of fortune finds the children bred in luxury quite capable of turning to some useful and remunerative employment.

The higher education of the children does not produce a distaste for manual labour. I was informed by the lady who is at the head of the 500 women employed by the National Cash Register Company at Dayton that a very large number of the girls had graduated in the normal school, and were fully qualified teachers, whilst nearly all the others had spent part or the whole time necessary to go through the courses of instruction in the high school.

The high school course begins at the age of 14 or 15 years, and continues for three or four years, although there is nothing to prevent the pupil remaining in the school until the age of 21 years or over in order to graduate.

In Pittsburg there were 1,877 pupils enrolled in the various high schools in the year 1900, over 70 per cent. of whom remained until the end of the first year; fully two-thirds entered upon the second year's work, whilst about one-half of the original number remained in school until the end of the second year. Forty per cent. returned to school for the third year's course, and 30 per cent. did so the fourth year, while nearly 30 per cent. graduated. No reliable statistics appear to be available to show the percentage of pupils who enter the primary schools and who ultimately become graduates of the high schools. So far as I was able to obtain information upon this point, however, it appears that not more than 8 per cent. receive the benefit of the twelve years' course of public education in most towns and cities, whilst in others, more fortunately situated, the numbers approximate to about 18 per cent.

The high school courses are becoming increasingly popular because of the development of facilities for giving a sound commercial or mechanical course of instruction.

The cost per pupil for instruction in the Indianapolis High School for 1902 was 29dols. 68c., or £6 3s. 8d., as compared with

19dols. 95c., or £4 3s. 1½d., in the elementary schools, and 40dols. 20c., or £8 7s. 6d., in the manual training high school.

It is interesting to note that when an Eastern newspaper asked the opinion of representative men engaged in educational work as to which city schools they considered to be the best in the country, those of Indianapolis received a majority of the votes.

Of the 27,884 children in the Indianapolis schools, 3,875, or 7.1 per cent., are in the high schools. Sixty per cent. of those in the high schools were learning German, 30 per cent. French, and about 10 per cent. Spanish. The complete course covers four years, and it has been made apparent that those parents who were at first unwilling that four years' time should be devoted to the acquirement of a purely academic education are now only too willing to keep their children at school, as they believe that the effectiveness of a purely abstract training that comes from books will not be lessened by combining with it the discipline of the hand.

In the Brookline High School there are 400 students in all. There are 25 scholars in each class. They are admitted without examination. A new manual training school has been opened which cost 100,000dols., and an additional 30,000dols. for equipment. Each class has 25 pupils. In one class I was shown a design for a wallpaper for which the student had received 10dols.

Dr. Harris, the United States Commissioner of Education, states that: "The students in the secondary schools are increasing five times as fast as the population of the country, and those taking up the study of Latin ten times as fast."

The high schools are interesting, both from an economic and a sociological point of view. Only about 12 per cent. of all the scholars enrolled in them are preparing for college; all the rest leave school either before completing the school course, or immediately after the secondary school course is finished. Many enter a training college (normal school) in order to prepare for the teaching profession, whilst the others begin active life in some business or other employment. One can trace the influence of the high school training in the manners and capacity of all the young people to be seen at work in the business places and factories in the United States. The actual results of the high school course, great as they are, are not such important factors in a social sense as are the habits of study which have been acquired during the most important period of physical and mental development.

Dr. Maxwell, the City Superintendent of Schools in New York, states that they are required by law to teach hygiene and the effects of alcohol on the human system. This is done in the primary grades, and is not neglected in the secondary schools.

Among the subjects for study very great attention is paid to English literature and the English language. There are a great variety of text-books, whilst quite a number of schools devote five hours a week to these subjects.

The high schools are a great and important factor in the development of a great people and a great country. Public opinion is, fortunately, in favour of giving them every possible advantage, and their efficiency is shown by the fact that private secondary schools are not greatly increasing in number. Indeed, private schools do not play a very prominent part in the educational work of the country, and there is no general desire to increase the number.

Wherever efforts are being made to establish schools of this sort, they are always due to the desire to impart denominational religious teaching along with the instruction in general subjects.

Manual and Commercial Training Schools.

Nothing is more astonishing to the average Englishman than to note the remarkable development of facilities for manual, technical, and commercial training which has taken place in the United States within the past few years. It seemed to me, during the course of the tour, as if the major portion of the adult population, together with the whole of the children of a high school age, were engaged in receiving some sort of instruction in one or other of their manual training or technological institutions.

The major portion of the adult population appeared to be seeking instruction in one or other of the mechanical arts or sciences. Every class in the evening schools appeared to be crowded out, and the directors of these educational institutions seemed to be quite unable to receive all those who were willing to enrol themselves as students.

Manual training, in the opinion of Dr. Jones, of the Lowell School, Boston, awakens the power of concentration in children to a greater degree than most other exercises do. This opinion is held very strongly by all those who are engaged in the work of teaching in the United States and in Canada. Dr. Eliot, of Harvard, said: "For the last twenty years I have seen that one of the great improvements which have been wrought in education in all civilised countries has been the individualisation of instruction, so as to meet the precise needs and develop the capacities and powers of each individual at every stage of his development. Now, laboratory teaching and manual training are alike in that they must be addressed to the individual."*

Professor R. H. Richards, of the Massachusetts Institute of Technology, in an address on "manual training as an inspiration to mental development," has given some remarkable personal testimony to show how impossible it was for him in his early years to concentrate his mind upon any abstract study, but how easily he succeeded in the subjects of chemistry, geology, mineralogy, surveying, physics, and drawing. Nearly every one of those city superintendents of education that I met voluntarily expressed the opinion that those students who take up the manual training or commercial courses do as much good work of an academic character as those who do not.

The manual and commercial training departments are singularly well equipped. It is not unusual to find in them from 20 to 50 typewriting machines, together with all the other apparatus for teaching stenography, book-keeping, and the routine of office work. In some manual training schools there are 50 benches, each one of which is equipped with an excellent outfit of joiner's tools. Large and handsome workrooms are to be seen in the high schools in almost every town, with a great array of wood-turning lathes and patternmaking benches. In the ironwork department one may see 20 or 50 vices for benchwork, and from 20 to 50 lathes and machines for all kinds of engineering shop practice. There is invariably a number of forges (in the Indianapolis Manual School there are 21 of

* It is necessary to note the difference between manual training in woodworking, etc., and physical training in the gymnasium.

the Sturtevant type), and in the foundry there is provision for making fairly large and useful castings. Circular and jig saws and wood-planing and moulding machines are also used in many places. Wood-carving is taught in every school, whilst special attention is always paid to drawing.

I have seen a great deal of most excellent woodwork which has been done in these schools. All the articles which are produced are for use, and students are only allowed to take home those things which have been properly finished. Chainmaking and ornamental ironwork form part of the mechanical course. The students in very many schools do a good deal of screw cutting and machine tool-making, whilst in many instances a number of lathes and machines have been made by the students for the use of those who will follow in their footsteps in future years.

I have been surprised and delighted beyond measure at the ability displayed by the students in scores of these schools.

It is quite usual for a group of students to combine together to make a lathe, and for every part of the work to be done by themselves, including the designing of the machine, making the drawings, patterns, castings, etc., and finishing and erecting the job.

The outline of the course of study of the Indianapolis Manual Training School is a fairly representative one, and indicates the scope of the work undertaken by the students. (See page 384.)

The New York High School of Commerce is a public school under the control of the Board of Education. No fees are charged to the students, and all the books and school apparatus are provided free of cost. This is a very different type of school from those excellent high schools known as the De Witt Clinton High School for Boys and the Wadleigh High School for Girls, which are of the ordinary type. The School of Commerce has not one aim, but several. The faculty consists of 30 instructors, and the curriculum includes literature, history, art, and music, as well as the more necessary subjects of languages, drawing, economics, mathematics, and general commercial training. As its name implies this school has been established for the special purpose of training young men for business pursuits. The school is designed to supply thoroughly equipped young men for the higher positions in trade, finance, and business management. The widening field of foreign commerce is especially in need of well-trained young men, and this school has been opened for the express purpose of affording facilities for even the sons of the poorest in the community to obtain that training. This school has but recently been moved into the handsome new building in West 65th Street, and the most sanguine anticipations are entertained as to the progress which this institution will make during the next decade.

The following synopsis of the course of study shows that, whilst not aiming at a general preparation for college, the school has a course of study so broad and full that the graduate who wishes to pursue his studies in a higher institution will find himself well equipped to do so. President Eliot's dictum "that the best school preparation for life is also the best preparation for college" has "influenced the choice and arrangement of the studies in the curriculum of this school."

NEW YORK CITY HIGH SCHOOL OF COMMERCE

COURSE OF STUDY.

FIRST YEAR.

Required.	Periods.
English	4
German, French, or Spanish.....	4
Algebra	4
*Biology (with especial reference to materials of commerce)	4
Greek and Roman History.....	2
† Business Writing	4
‡ Stenography	2
Drawing	2
* Physical Training	2
Music	1
	—
	25
Electives.	Periods.
Business Arithmetic	1
Commercial Geography	1

SECOND YEAR.

Required.	Periods.
English.....	3
German, French, or Spanish	4
Plane Geometry	3
Chemistry (with especial reference to materials of commerce)	4
Mediaeval and Modern History (with especial reference to economic history and geography).....	3
Stenography	2
Drawing	2
Physical Training	2
	—
	23

Electives.	Periods.
German, French, or Spanish	4
Business Forms and Bookkeeping ..	3
Music	1

THIRD YEAR.

Required.	Periods.
English.....	3
German, French, or Spanish	4
Algebra and Geometry	3
Physics	5
English History (with especial reference to economic history and geography)	3
Physical Training	2
	—
	20

THIRD YEAR (continued).

Electives.	Periods.
German, French, or Spanish	4
Bookkeeping and Commercial Arithmetic.....	4
Stenography and Typewriting.....	3
Drawing	2

FOURTH YEAR.

Required.	Periods.
English.....	3
German, French, or Spanish	4
Economics and Economic Geography ..	4
History of the United States (with especial reference to industrial and constitutional aspects)	4
Physical Training	2
	—
	17

Electives.	Periods.
German, French, or Spanish	4
A third language.....	4
Advanced Chemistry	4
Trigonometry and Solid Geometry ..	4
Elementary Law and Commercial Law	4
Business Correspondence and Office Practice	4
Stenography and Typewriting.....	4
Drawing	2

FIFTH YEAR.

Required.	Periods.
English.....	3
Logic, Inductive and Deductive....	3
Physical Training	2
	—
	8

Electives.	Periods.
A foreign language.....	4
Advanced Mathematics.....	4
Advanced Physics	4
Industrial Chemistry.....	4
Economic Geography	4
(19th Century History, Europe and Orient; Diplomatic History, United States and Modern Europe).....	4
Banking and Finance, Transportation and Communication	4
Administrative Law and International Law	4
Accounting and Auditing	4
Business Organisation and Management	4
Drawing	4
Advanced Economics.....	3

* Including physiology.

† First half-year.

‡ Second half-year.

GENERAL COURSE OF STUDY IN THE MANUAL TRAINING HIGH SCHOOL, INDIANAPOLIS.

FIRST YEAR.		SECOND YEAR.		THIRD YEAR.		FOURTH YEAR.	
ENGLISH. ALGEBRA.	ENGLISH. ALGEBRA.	ENGLISH. Plane Geometry. Circles.	ENGLISH. Plane Geometry. Circles.	ENGLISH. Algebra.	ENGLISH. Solid Geometry. Higher Algebra.	English. Trigonometry.	English. Analytical Geom. Arithmetic.
Ancient History. Latin. German.	Ancient History. Latin. German.	Med. and Mod. History. Latin. German.	Med. and Mod. History. Latin. German.	English History. Latin. German. French. Greek.	19th Century History. Latin. German. French. Greek.	U. S. History. Latin. German. French. Greek.	U. S. History. Latin. German. French. Greek.
Woodworking.	Woodworking.	Forging. Mechanical Drawing. Freehand Drawing.	Forging. Mechanical Drawing. Freehand Drawing.	Foundry Work. Mechanical Drawing. Freehand Drawing.	Foundry Work. Mechanical Drawing. Freehand Drawing.	Machine Fitting. Mechanical Drawing. Freehand Drawing.	Machine Fitting. Mechanical Drawing. Freehand Drawing.
Freehand Drawing.	Freehand Drawing. { Stenography. Typewriting.	Mechanical Drawing. Freehand Drawing. { Stenography. Typewriting.	Mechanical Drawing. Freehand Drawing. { Stenography. Typewriting.	Physics. Chemistry, I. Physiology.	Physics. Chemistry, II.	Physics. Chemistry, I.	Physics. Chemistry, IIa. Zoology.
Stenography.	Bookkeeping.	Bookkeeping.	Bookkeeping.				
Bookkeeping.	Cooking.	Hygiene.	Hygiene.				
Cooking.	Sewing.	Botany.	Botany.				
Sewing.							

Studies in CAPITAL LETTERS are prescribed and must be taken in the order given.

Studies in *Italics* are elective. The study is placed in the lowest grade in which it may be chosen without special permission. Pupils of an upper grade may select any study of a lower grade.

Thirty-one studies, each continuing one-half year, are necessary for graduation. Pupils are expected to complete *four* studies each half-year.

The following studies are included under the head of Manual Training: Woodworking, Forging, Foundry Work, Machine Fitting, Freehand Drawing, Mechanical Drawing, Cooking, Sewing, Stenography, and Typewriting.

Senior Composition is prescribed for all students; one credit is given for one year's work in this study.

Cost of Education per Pupil.

In the year 1901-2, the cost per pupil in the public schools in New York was 32dols. 70c. (£6 13s. 3d.), in Philadelphia 22dols. 45c. (£4 13s. 6½d.), Washington 26dols. 98c. (£4 1s. 5d.), Dayton 20dols. 17c. (£4 4s. 0½d.), Boston 34dols. 22c. (£7 2s. 7d.), Indianapolis 19dols. 95c. (£4 3s. 1½d.), Chicago 32dols. 3c. (£6 13s. 5½d.), and in Pittsburg 27dols. 9c. (£5 12s. 6d.) These figures are based upon the total number of scholars in average daily attendance, and are exclusive of the cost of permanent improvements. In Dayton the cost, including the cost of general supervision, music, drawing, physical culture, penmanship, German, the high schools, normal schools, kindergarten, and the manual training school, is 22dols. 91c. (£4 15s. 5½d.) In Indianapolis, the *per capita* cost of instruction in the high school was 29dols. 68c. (£6 3s. 8d.), and in the manual training high school 40dols. 20c. (£8 7s. 6d.) This statement does not include the expenses for new buildings, sites, interest charges, night schools, or new equipment for the manual training schools.

There appears to be no difficulty in obtaining ample funds for the erection and equipment of school buildings in any of the large cities or towns in the United States. The expenditure incurred by the Indianapolis School Board has necessitated an increased appropriation of 100,000 dollars per year, and this has been granted ungrudgingly and without a dissentient voice being raised against it.

Education by Correspondence.

What we need in Great Britain more than anything else, and at once, is some system of education for the mechanic and artisan class, in order that they may be immediately enabled to carry into effect many of the ideas which are now latent in their minds. Much-needed improvements in machinery ought to be most readily brought about in this country as in America, by the man who is engaged with the machines every day.

One of the most remarkable concerns that I visited whilst in the United States was the International Correspondence School, whose headquarters are at Scranton, Pennsylvania. This institution has 28 business centres in each of the larger cities in the United States, and in very many of the capitals of other countries. Started in 1891, it has grown into a large concern giving employment to over 4,500 people. An enormous building has just been opened at Scranton to accommodate part of the ordinary staff.

The schools fill a necessary and unique place in the educational work being carried on in the United States. I have made extensive inquiry, and have been assured by manufacturers, trade union officials, business men, managers, engineers, and foremen that the education obtained by means of the Correspondence Schools is most valuable, and that their certificates are a sure passport to employment and advancement.

The enterprise owes its inception to the fact that the president of the schools, who, in the year 1891 was editing a newspaper, devoted a few columns to answering questions of correspondents on matters relating to mining and engineering educational subjects. Before long the questions grew to be so numerous that regular instruction was undertaken, and it became necessary to

charge fees and engage expert assistance to conduct the work. Several trade journals were established, notably *Mining*, the circulation of all of which has gone on steadily increasing. The subjects which were at first most eagerly taken up were mechanics, drawing, steam engine running, and architecture. At the present time there are over 3,200 persons engaged in the work of instruction at Scranton; over 650,000 students have graduated in the various courses, whilst over 150,000 new students are being enrolled every year. Many thousands of those who hold prominent positions in the great industrial undertakings of America own that they have been especially well equipped by means of the instruction gained in these schools.

Curiously enough, no less than four-fifths of the pupils enrolled in the first two years were British students. Of late years the numbers have dwindled down to a very small quantity owing to the fact that the schools have never advertised in England, whilst probably there has not been that eagerness shown by our mechanics in recent years to get on that there used to be.

At one time it was hoped that the University Extension Movement would meet all the requirements. Such has not been the case. In America the system of education by correspondence has now come to be recognised as being by far the easiest for the uneducated man, and the least expensive.

The distinctive function of these schools is to teach the theory of engineering, and of various other arts and trades to men and women already at work. Notwithstanding the remarkable results that have been accomplished by these schools, there are people who still doubt that proper technical instruction can be given by the correspondence methods. President Foster assured me, however, that six-tenths of their new students take up their courses of instruction because they have noted the remarkable progress made by some student with whom they have been brought into contact. The courses of study are arranged with a view to meeting the requirements of all classes of workers in mechanical industries, from the humblest apprentice to the skilled mechanic and the trained engineer.

The correspondence schools appeal particularly to those classes of workers who require more or less of a theoretical and technical knowledge than can be acquired in the ordinary routine of daily work. The theory and technique of most trades are beyond the reach of the ordinary workmen unless they devote a portion of their time to study. In the vast majority of cases they leave school for the workshop with hardly more than the bare rudiments of an elementary school education, and the need of theoretical instruction in the trades rarely occurs to them until they are brought face to face with the fact that future advancement depends almost entirely upon the acquisition of this knowledge.

As a practical engine driver (the American term is engineer), I unhesitatingly assert that the system of education by correspondence has resulted in enormously increasing the efficiency and the earnings of the American locomotive and stationary engineers. The average American engineer is without a superior, probably without an equal in general ability, in the world. This, and the superior position he occupies in America as compared with the other workmen, is due (in the opinion of the leaders of the

engineers' trade unions) to the habits of hard study which the men adopt in order to enable them to pass the strictest examinations. The text-books and instruction papers issued by the International Correspondence Schools are made as simple as possible for the beginners. The student's work is sub-divided into many short easily-mastered lessons, and only the plainest language is employed to make the facts and principles clear. The instruction and question papers are copiously illustrated. Each paper is complete in itself, and the student is led on by very easy stages from the elementary to the more advanced work in whatever course he is engaged in. If the student finds himself in any difficulty, he is encouraged to write to the central office for assistance. In many cases he finds the solution of the problem whilst stating his difficulty. No effort is spared by the schools in giving the fullest explanation and assistance, and special instructors are assigned to students who are particularly backward.

The United States Commissioner of Labour, Colonel Carroll D. Wright, in his seventeenth annual report, speaks as follows regarding these schools:—

"Although the average age of students in the International Correspondence School is about 26 years, more than 80 per cent. know nothing of fractions when they begin their studies. For such students as these, the ordinary text-book is intricate and difficult. It was obvious at the outset that text-books for teaching the manual industries by mail must combine simplicity with thoroughness, otherwise failure was inevitable. But no such text-books were in the market. It was necessary to have them written. For this work men strong both in the theory and the practice of each trade to be taught were found. In engaging men to prepare the text-books for any industrial or engineering speciality, the management of the schools state that two conditions of fitness have been rigidly insisted on: first, that they must have thorough theoretical education in that and allied specialities; and second, that their education in theory shall have been supplemented by satisfactory practical training. Both the technical school and the work-shop must be represented in their equipment.

"There are so many cases where the system of instruction pursued by these schools has enabled the students to advance from the lower branches of a trade or occupation to a complete mastery of the same that it would be impossible to estimate the benefits that have accrued to those who have been under instruction. In the higher positions are to be found foremen, superintendents, master plumbers and builders, architects, and electrical and mechanical engineers, who bear witness to the work of this instruction. Men already engaged in trades as machinists and patternmakers have been enabled to rise to mechanical draughtsmen and designers; carpenters, cabinet-makers, and bricklayers have become architects; miners have been promoted to foremen and superintendents; and in electrical occupations, linemen, repairmen, and motormen have been advanced to inspectors, foremen, and electricians. There are thousands of students also whose earnings and prospects have been increased from 50 to 200 per cent. by the instruction they have received. The increased efficiency of the students and graduates is recognised on every hand, and when it is considered in occupations in which drawing, designing, and lettering are the most important elements, it is possible for the graduates to engage in practical work without undergoing a period of apprenticeship, there is ample ground for saying that the methods of instruction employed in these schools are productive of practical and substantial benefits to those who are under instruction."

That the courses of instruction are thoroughly practical and effective is borne out by the testimony of large numbers of leading manufacturing concerns, such as the Baldwin Locomotive Company, Messrs. Cramp and Sons, the General Electric Company, the Westinghouse Company, the Pennsylvania Railroad Company, and very many others, a number of whom have made arrangements to allow their apprentices who take up these courses to take an hour

or two in one afternoon of each week to work up their lessons. In several places the firms have set aside a suitable room for the use of the students, and have done much in the way of providing laboratory apparatus where needed.

The school runs a railroad train of six cars, which operates on 90 different railroads. This train is used for the purpose of giving practical instruction in railroad working, and for the delivery of a series of educational lectures to the students who are employed on the lines.

The following outline of a course of study shows the comprehensive and ambitious character of the work undertaken by this vast institution. The "complete steam engineering course," as its name implies, is a thorough and complete treatise on all subjects pertaining to steam engineering, and will qualify a man to become chief or consulting engineer of the largest steam plants, pumping stations, etc. The course is also of great value to designers of steam plants, boiler inspectors, supervising engineers, etc. Supplemented by the necessary practical experience, it will qualify students to pass examinations for first grade licences. The subjects taught are: Arithmetic, mensuration, principles of mechanics, machine elements, mechanics of fluids, strength of materials, elements of electricity and magnetism, dynamos and motors, operation of dynamos and motors, heat and steam, types of steam boilers, boiler details, boiler fittings, combustion, firing and draft, boiler design, economic combustion of coal, automatic furnaces and mechanical stokers, boiler installation, boiler management, boiler trials, boiler feeding and feedwater problems, the steam engine, the indicator, engine testing, governors, valve gears, condensers, compound engines, engine management, engine installation, pumps, elevators, steam heating, geometrical drawing and mechanical drawing.

The method of education by correspondence is very general in the United States. There are large numbers of institutions similar to the one at Scranton, besides which almost every institute of technology, such as the Steven's Institute, Pratt Institute, and the Armour Institute, have each a correspondence department.

Evening Schools.

Wherever one may go in the United States, one is impressed with the fact that very large numbers of persons of all ages and both sexes attend the evening classes. In Boston, an evening high school was established in 1869, discontinued in 1881, and re-established in 1882. Two branches of this school have been opened in recent years. In 1888 the school committee adopted a course of instruction for each department of study pursued in the school, which included the subjects of English composition, German, French, Latin, penmanship, phonography, arithmetic, algebra, geometry, book-keeping, history and civil government, physiology, and hygiene. At the same time a plan was adopted for the giving of certificates to pupils satisfactorily completing the course of instruction in the several subjects. In this school the "elective system" is firmly established, and no particular time is required to complete the whole or any part of the courses provided, although a diploma can hardly be earned in less than three or four years. The

courses of study are much the same as those pursued in the day schools. For the year 1902-3 the number of students registered was 4,225; the highest number in any previous year was 3,682. For the year 1901, an appropriation of 1,000 dollars was made by the school board for evening lectures, whilst for the last year the appropriation for the same purpose was 4,200 dollars.

There are 15 evening schools, in which there are 219 teachers engaged. The average number of pupils belonging to these schools is 5,795, and the average attendance is 4,153. In addition, there are six drawing schools with 599 pupils, and an average attendance of 463.

The evening classes in domestic science provide for instruction in millinery, dressmaking, cookery, needlework, crewel work, and embroidery. The tuition is all free. I was informed by one of the principals that a lesson in any one of these subjects would cost each student a dollar if they were obtained at any private institution. Upon inquiry I found that there has never been the slightest objection raised by tradesmen or others to the appropriation of public money for these purposes.

A unique feature in connection with the American evening schools is that day scholars attend in considerable numbers in order to get assistance with their home lessons.

In many evening schools concerts are held on Friday evenings. The manual training, drawing, and commercial classes are always largely attended.

The Chicago public evening schools are attended by 9,104 pupils, and of these 4,323 are Americans. Very large numbers of pupils also attend the evening classes at the Athenæum, where excellent instruction is given in elementary subjects, drawing, stenography, book-keeping, and domestic science.

Education and Industry in America.

The supreme test of a nation's educational system is to be found in the quality of the citizens which it produces. That the average American is more efficient, industrially and commercially, than is the citizen of any other country is very generally admitted. It may be questioned by some whether the public school system has very materially affected the economic progress of the American nation, but I think the evidence adduced by American business men and educators is conclusive upon the point. Professor Murray Butler, of Columbia University, states: "Where the public school term in the United States is longest, there the average productive capacity is greatest. This can hardly be a coincidence. When the man of science finds such a coincidence as this in his test tube, he proclaims it a scientific discovery proved by inductive evidence. The average school period for the whole of the United States was, in 1897, 4.3 years. That for Massachusetts is seven years. The proportion is as 70 to 43. It is interesting to note that the proportion between the productive capacity of each individual in Massachusetts and that of each individual in the whole United States is as 66 to 37—education 70 to 43, productivity 66 to 37. On the basis of 306 working days, and a population just over two millions, every citizen of Massachusetts is to be credited with a productive capacity of 88½ dollars (£18 9s. 9d.) every year more than the average of the United States as a whole."

President James, of the North-Western University, appears to entertain a somewhat different opinion. He points out that it was "the forging ahead of the United States from a position of comparative unimportance to a position in the very front rank of highly civilised nations, in wealth and population . . . which led foreign peoples to ask, what is the real secret of this phenomenon. . . . It is natural that among the explanations of this remarkable fact should be advanced the proposition that the educational institutions of the United States were responsible for a large part of this remarkable prosperity. . . . The men who have made this country and are making the great things we see about us to-day could not be the product of this system—(*i.e.*, the remarkable and excellent system of high schools and technical schools) simply because it did not exist at the time when they received their training. Our greatest feats of engineering were performed by men who never attended a really good school of technology. In brief, it is probable that the American school is the product of the American spirit rather than the American spirit the product of the American school."

President James does not deny that the future success of the country's industries may be materially advanced by the more liberal training in the arts and sciences of the rising generation. President Roosevelt said, when addressing the members of the Commission at the White House: "Education may not save a nation, but a nation would certainly be ruined without it." The student of American business and social institutions is invariably brought to ask himself whether this enterprising and capable people are the product of the national system of education, or whether the educational system is the result of the national spirit? One may fitly speak of "a national system," for, whilst every State and city has its own special organisation, there is an essential unity in the aims of the authority to make education universally accessible, and by means of it to lift up the whole population. Very many of the great industrial concerns were established by men who received but a scanty education themselves, but who, nevertheless, have steadily relied upon the assistance of expert young men to help them in the development of the great enterprises for which the country is famed.

The "backwoodsman" type of man possessed great resourcefulness and energy, but the men who have done the great things in American industrial enterprise within the past 30 years have, nearly all of them, received some sort of special training. The men who have climbed to the top by means of intense labour and "burning of midnight oil" have been the first to recognise the advantage to be derived from a sound elementary course of instruction, in which manual training should be made a prominent feature. One need only enter such great concerns as the General Electric Company's Works, the National Cash Register Works, or the Baldwin Locomotive Works, to be amazed at the number of men under 40 who hold very responsible positions. The general manager of the Cash Register Works is only 30, whilst his assistant manager is but 29.

I spent some days with the 125 officers of the Cash Register Works, and found that every one had received a good education of some sort. I was assured by the chief of the inventions department

of that concern that the "best and most of their inventions and improvements of machinery were brought about by those who were best educated, and who were able to embody their ideas in a creditable drawing." This is the sort of testimony one meets with on every hand. In the United States, more than in any other country, one finds that the business man is also an educator, and that the educator is a business man also. Dr. Humphreys, the President of the Stevens Institute of Technology, and several of the brothers Pratt, of the Pratt Institute, are actively engaged in the conduct of large business concerns. Very many of the professors of electrical and mechanical engineering, of chemistry, physics, etc., are not only allowed but are encouraged to undertake outside work. It is considered that the man who is constantly required to put his talents to practical use in competition with others is much more likely to be up-to-date as the instructor of those who desire to learn. The American business man is more often an educationalist than an active politician. Nearly every large industrial concern has some sort of educational centre, or department, into which is directed an enormous amount of money and personal energy. The money spent on public education by no means represents the whole effort of the nation to raise itself to a higher intellectual level. As the result of his superior education, the American workman requires less supervision and direction than is customary in this country. I have been informed by machinists that they are all required to read drawings, and to work directly from them, instead of having the job "marked off" by an official in the works. The popular notion that the American workman labours at high pressure from very early to very late is altogether erroneous. Machine production has been brought to such a high state of perfection that the American workman is very seldom or never seen to be in a hurry, and certainly does not perform nearly the amount of hard manual labour which is performed by the average workman in this country. It has been stated with authority that one foreman has been able to take charge of and control the operations of 1,800 men employed in engineering work. Fortunately, for American industrial enterprise, all positions of responsibility are open to any man of superior ability, and such things as giving leading positions to men because of family or money interest are scarcely known at all. The American employer and the American workman are agreed with respect to one matter, and that is, the advisability of doing by machine production whatever can be done to lighten manual labour. The American is always ready to adopt, or adapt, any new system or method in order to increase productivity with the least expenditure of manual effort.

So eager are American workmen to acquire a technical knowledge of their trades that the authorities of the Pratt Institute informed us that they were reluctantly compelled to refuse one-half of those who applied for admission to their classes for engineering drawing. This great institution employs no fewer than 115 teachers, whilst the students themselves have organised what is called a "neighbourship association," for the purpose of employing their spare time in giving instructions to others in the courses which they themselves have been instructed in. So far as the Auchmuty trade schools of New York are concerned, I am of opinion that they undoubtedly attempt too much, particularly when they seek to teach a building trades labourer the trades of bricklaying, plastering, and masonry.

American industrial progress is due more than anything else to the determination shown by the American working classes to equip themselves in the most thorough-going fashion. Hundreds of employers testify to the fact that there has been an improvement in the quality of the work and an increase in the quantity of the output as the result of technical education. The labour unions agree with the testimony of the Government Department of Labour that wages have increased proportionately with the increase in production. Many employers very wisely allow their employés to attend classes for trade and technical instruction during the afternoon, without loss of wages, recognising that this ultimately means greater economy in production.

Mr. Johnson, director of the Baldwin Locomotive Works, informed me that the trade and manual training schools are indispensable, whilst the technical schools have made the country great. The tendency in these schools is more and more to specialise. In England a little education is regarded as being necessary to equip the youth for some clerical work, but in the United States the manual training courses correct this tendency, and there is much greater desire displayed to follow some mechanical employment. The American people are thoroughly progressive and are extremely optimistic. Dr. Sayre, principal of a manual training school in Philadelphia, informed me that he had not a single rule wherein the expression "thou shalt not" could be found.

The aim of the Commission was to inquire into and trace, as far as possible, the influence of American educational effort upon the industrial and commercial affairs of the nation. I am convinced, from all that I have seen, that however great the achievements of the past have been, they are as nothing compared with the progress which I believe will be made in the immediate future. On every hand I saw the evidence of a scientific and technical training in industrial operations. At the National Cash Register Works I saw machines in operation which take 103 separate cutting and boring tools, and I was assured that these machines were all evolved by their own employés. I believe that the American employers, by the adoption of the wise policy of giving encouragement to men of inventive minds, by rewarding those who suggest improvements in machinery, and by giving increased remuneration to those who operate such machines, have done, and are doing, much to increase their trade and to menace that of British producers who are in any way brought into competition with them. So far as I can see, there is urgent need for all those who are in any way concerned about the future of our industries to give the most earnest consideration to the question of the practical education of our artisan class, for after all the man of science cannot be effective in industrial operations unless there are those about him who can effectively carry out his ideas.

I spent the last three weeks of my time in the United States in visiting a large number of industrial concerns, and in studying the conditions under which the working people of the country live and labour. I have formed a very high opinion of the American workers of both sexes. The men are alert, highly intelligent, sober, and self-respecting in the highest degree. The American workman is invariably courteous and accommodating—in a word, a gentleman. With respect to the women who work for a living, I have

been delighted to observe the evidence of a superior culture of the intellect and character. Their leisure time is invariably occupied with some useful manual or intellectual employment or in extracting what pleasure they can from vocal and instrumental music. Large numbers of employers have followed the example set by President Patterson, of the National Cash Register Works, of having pianos in the ladies' dining-rooms. The farseeing American employer recognises that there is a substantial economic value behind every reform which contributes to the intellectual vigour and the personal comfort and happiness of every employé.

Recommendations.

1. The age for compulsory attendance in the schools should be raised to 15 or 16 years.

2. The number of children in any one class should not exceed 50.

3. Better facilities for manual instruction should be provided, and special attention should be paid to drawing and workshop practice in wood and ironwork for boys, and in the domestic sciences and needlework for girls. In both primary and secondary schools large sums of money need to be obtained for the equipment of the manual training departments.

4. The establishment, out of public funds, of free secondary schools, more particularly for manual and commercial training.

5. The development of the evening schools and classes, and their popularisation, so that they become everything that can be desired in the way of "continuation schools."

6. The granting of greater opportunities by employers of labour for apprentices to receive a theoretical and practical training during the daytime and in the evening.

7. The provision of numerous free lectures of an educational character such as would appeal to the artisan and the labourer. For this purpose all school buildings should be used free of charge.

8. Teachers should "specialise" more, and be required to teach only two or three subjects.

JOHN WHITBURN.

Mosely Educational Commission.

Report of Mr. THOMAS BARCLAY.

COMMERCIAL EDUCATION AND AMERICAN PROSPERITY.

No branch of education has given rise to more vague and useless discussion than that of commercial education. The assumption is that it has been dealt with successfully in other countries, and that we are lagging behind where others are going more and more briskly forward. The examples of Germany and Belgium and France have been held up to us by reproachful reformers, and we have studied official and other education reports, and tried fitfully to take the lesson given us by the pessimists. We have even tried our own hands at schools of commerce, at a University Commercial Faculty, and yet we are dissatisfied. In fact, we are practically in the same position as five years ago when Mr. Lyulph Stanley wrote: "What is greatly to be feared is that public opinion in the commercial world is at best at the stage of a vague dissatisfaction with things as they are, but does not realise how thorough and how purely intellectual should be the preliminary training of the man of business." The opinions of commercial men, however, are not alone to be consulted on this subject. At the very best, they can only have the value of personal experience. They are necessarily limited by the actual requirements of individual businesses, and what is true of the one may or may not be true of another. Moreover, a distinction must be made between the general or national point of view and the class point of view, and an education which may be extremely useful for the creation of unambitious, hard-working, painstaking employés may not favour the training of the men by whom the ultimate national prosperity can best be promoted.

It was with these ideas in mind that some years ago I was called upon, as President of the British Chamber of Commerce in Paris, to deal with the question of commercial education. In 1899 I was invited by Mr. Hemelryk, chairman of the Liverpool School of Commerce, to lay my views before a number of leading educationalists and public-spirited business men of Liverpool. I think we all felt the truth of Mr. Stanley's observation, and that we were more or less upon a wrong track in generalising from the analogies of kindred subjects. It had been assumed that commerce is a profession like the law or medicine—as if there were a body of principles applicable to commerce and a mass of experimental knowledge based on them which can be classed and taught in the same way as different branches of legal and medical science. When the subject was approached in detail, we found that there were no principles but those of the science of economics, which is not the same thing, and that what was really useful to men in business was a more or less specialised adjunct of secondary education.

Those who are familiar with the different special schools in the countries I have mentioned know what a small proportion, if any, of their successful business men have been trained in these schools or faculties, and what a large proportion, on the other hand, of men in the consular and administrative services have been educated in these institutions.

Amid all this doubt and hesitation and the unsatisfactory evidence of continental nations, I was glad to accept Mr. Mosely's invitation to join his Educational Commission for the purpose of examining the subject in a country of our kith and kin, where the circumstances would probably be more analogous to our own than in continental Europe, and where the question was not complicated, as in continental Europe, by compulsory military service.

Those who have had access to the American official publications on commercial education, especially President James's remarkable study on the subject in the two volumes "On Education in the United States," edited by President Butler in connection with the Paris Exhibition of 1900, and Mr. Hartog's valuable monograph on commercial schools in the United States, included in the educational series edited by Mr. Sadler for the Board of Education, have been able to obtain a very fair idea of the details of the subject. Yet it is only when one comes into actual daily contact with the educationalists, business men, and statesmen of the United States that one really begins to understand the American standpoint, and to see that it, too, is totally different from our own. Elsewhere I hope to discuss, more fully, the objects and ideals of American education as a whole; but I may at once say here that American primary education is complicated by problems arising out of a large alien immigration, for which there is no corresponding element in educational problems in this country, just as continental secondary education is complicated in another way. The necessary broadening of the base of primary education in the United States gives educationalists a weaker foundation on which to build secondary education. They have, therefore, to strengthen the intellectual fibre produced by the rather loose work of the primary school by throwing a large amount of primary work into the secondary schools. This, again, carries a good deal of secondary work forward to the higher educational establishments.

There is no problem of commercial education, in the sense in which we understand it, in a country where practically everybody will probably enter a career of commerce or industry. Nor is there any such thing known in the United States as fixing a child's future in its tender years. The American social idea is to give the child all the education he or she can use. The boy who feels his fitness for any particular career is provided with the means of obtaining the training for it, and is not in way dependent for obtaining it upon his parents' means. The British mind must at once disabuse itself of the idea that Harvard and Yale are educational centres for the seventy or eighty millions forming the population of the United States. They are only two universities which have more or less resisted the democratic tendencies of the New World. Every State of the Union has its own universities and colleges, and is working out its own problems, the foremost of which is to bring every branch of education within the reach of everyone without distinction of fortune. So much is this felt to be an essential factor in the

prosperity of the country that its richer citizens are not only expected to give but do willingly give a large proportion of their millions to promote this object.

Out of these facilities for obtaining higher education has grown the only real American problem in connection with commercial education: the problem of what is the proper age for a young man to enter business, and of whether a college education—that is, an education which absorbs a young man's life from 18 or 19 to 21 or 22 years of age—is a desirable addition to the mental and moral equipment fitted for a commercial career, or whether secondary education suffices.

I have had rather exceptional opportunities during my four months' stay in the United States of ascertaining the opinions of Americans generally on educational questions—I mean, of Americans not delegated specially to give enlightenment—and I have made a point of knowing the views of as many business men as possible in regard to education. I may say at once that the idea of specialising for business purposes at school is not current among business men. The only business education that the American business man, so far as I have been able to ascertain, approves of is that given in so-called business colleges—special training schools in which lads, having received a high school or secondary education, are rapidly taught a number of matters of routine and conventional knowledge which dispense with the loss of time caused by "rawness" in the apprentice. I venture to say that anything so perfect as "Packard's College" in New York, which has no pretence to do more than this, does not exist elsewhere. All are agreed that high school or secondary education should be made as practical as possible. The reports of my fellow Commissioners on this subject will show how this requirement is being met. There are several secondary schools which are called commercial high schools. Their programmes are simply those of the ordinary high schools with a little specialisation in some branches for the requirements of business. The differences might be adopted by all secondary schools with advantage in a practical age like our own.

The question of whether a college career is desirable in addition to the secondary education which every American citizen considers indispensable is one upon which there is divided opinion. Assuming that a boy gets a good mental discipline by 18 years of age, most business men, however, seem to think that a college education, with its necessarily more or less relaxed personal discipline and its more or less speculative studies, directs into unpropitious currents the most adaptable years of a young man's life, and that a boy of 18 entering business can more rapidly and efficiently adapt himself to its requirements than, as an American said to me, the "top-heavy" young college men of 22. On the other hand, in actual practice most rich business men send their sons to college. This is, of course, explained by the social advantages a college education procures for a young man outside his business, and in many cases it provides what the self-made father may have personally felt the want of. This question, however, has not much practical interest for Englishmen, who will mostly agree to the proposition that three years spent at Oxford or Cambridge do not fit a young man for a commercial career, except that it opens up a lateral question

affecting all educational comparisons, viz., the age at which young men of different nationalities reach the same intellectual footing. Here I have had the benefit of the experience of Professor Münsterberg, of Harvard University, who contends that the young American is two years behind the young German, the latter leaving school at 19 on the same mental level as the young American at 21. My own experience is that this is the case as between the young Scotsman and the young Englishman, the former also being about two years ahead of the latter. I have accounted to some extent for the difference in the case of Americans. The explanation of the backwardness of young Englishmen is, no doubt, due to the bad methods of instruction in English schools, and especially to the excessive attention bestowed in them to sport. Other members of the Mosely Commission will probably deal with these defective methods. A number of American educationalists are endeavouring to strengthen the mental discipline of secondary education with a view to enable the American, like the German and Scotch boy, to begin his bread-earning work or studies, whatever they may be, at 18. I commend this to my fellow countrymen, and would suggest that the objects of teaching Latin as training for the imagination, of Greek as an enlargement of the mental vision, of mathematics as promoting concentrated reasoning, of grammar and literature as a discipline in accuracy and precision, are lost sight of in our higher secondary education, which has set itself altogether wrong ideals through a mistaken view of examinations.

When we get closer to Americans, we see that, in spite of all their apparent superficiality, their schools are turning out more active, business-like, hard-working, enterprising young men than either the English or the German schools—young men with greater ambition and self-reliance, and a greater capacity for development, equally courageous in work, and more sober in their lives, with a higher sense of industrial integrity, an all-round greater pleasure in effort, and better humour in adversity.

That this higher social tone in America is among the causes of American prosperity must be taken for granted. But there are other causes for it. There is:—

1. The immense field presented by an under-peopled country for enterprise;
2. The great natural resources and variety of climates, which make it possible to produce on American soil practically everything its population wants;
3. The enormous immigration into the country of men who have had the necessary pluck and independence to leave their own country and settle in a new one, men who are increasing the fitness of the population generally for the struggle for life;
4. To some extent the constant increase in demand for every kind of product due to these very immigrants, who represent a certain increase of purchasing power from the fact that everybody coming into the country must have some means of temporary subsistence.

Lastly, there is the variety of the immigrant stocks. All nations have some good characteristics, and America has the pick of them. In the Eastern cities and Chicago, whence my information is derived, all agree in placing foremost among them the Scotch. Their education, perseverance, attention to detail, and all-round capacity

for grappling with difficulties that require care and forethought have made them unrivalled where these qualities are sought after. America does not produce quite a similar kind of man. The German, with his wide, accurate knowledge, tenacity, and industry, is also almost a unique product which America does not seem to turn out. In the same category must be placed the Scandinavian. Ireland sends over the dominating race, which, with its genius for managing men, shows the uniqueness of its power by practically governing a large part of the country.

All these races, it is true, become American in the second generation, and, in the course of a few decades, it is almost impossible to distinguish the one from the other. Even the names often become merged in English or English-looking names, such as Nilsson in Nelson, Rosenfeld in Rosenfield, and so on. The product of the amalgamation is the ingenious, hard-working, good-humoured, adaptable being who fits himself into any situation that presents itself, which the American is, but the immigration goes on as ever, filling up the vacancies, from the old sources.

The same heterogeneous elements, which have worked themselves into one of the strongest homogeneous types of the world in England, are growing together and making an American type. The energy and enterprise of the immigrant, and his good health which goes with and more or less accounts for them, are seen in the tall muscular frames and massive heads of the men and the erect, handsome, and alert figures of the women. If there is any truth in atavism, the new American type will be a combination of the best that Europe can supply. The dominant feature in it is the Irish, with its enormous vitality, its healthy good humour and buoyancy, and its ingenuity and resourcefulness. It prevails down to the facial expression.

What was done in England by isolation from the parent stocks, which forced on inter-marriage, is being done in the United States by statecraft—by this education which every politician and every patriot looks upon as the smelting process by which the new people can be made homogeneous on lines of democratic independence and manly freedom, and which gives all in common that English language which is associated with the races in whose veins such ideas run with their life-blood.

American education, however, has set itself another ideal—the highest any free nation can set itself—that of saving the country from the pauperising curse of public charity. In Great Britain we have not always understood Mr. Andrew Carnegie's rule of insisting that whoever asks for help shall also help himself. This salutary rule is not only Mr. Carnegie's. It is American. It is directly aimed against the growth of pauperism and the maudlin public charity which engenders it. The democratising of every kind of education by placing it within everybody's reach free of cost, it is hoped by Americans, will promote adaptability, the absence of which in Great Britain is probably one of the causes of a pauperism which has no parallel in any other country. This adaptability is the second great object of American educational policy. The visitor has only to ask every other native-born American to tell him his history, to see how admirably it works in practice.

I hope I have not in any way produced an impression that I am holding up America as a paradise in all respects. Nearly

everything there, political, industrial, and educational, is in an experimental condition, and many mistakes have been made. Thus, an apparently mistaken and in any case uncompromising attitude on the part of the trade unions has probably been at the root of the remarkable progress in labour-saving machinery which strikes every European. That necessity promotes invention has been proved by an extraordinary activity in the devising of such machinery. It seems to me that the future of the American working classes lies in a clearer understanding of the fact that there is a point at which it becomes profitable to pay royalties and acquire patent rights and break up existing machinery rather than accept the terms of labour; that, in fact, labour is a commodity, subject to the general laws governing the development of new methods.

Again, defective political institutions make it difficult to grapple with the situations arising out of the concentration of overwhelming industrial power in few hands. This financial and industrial dictatorship strikes the European as strangely out of harmony with the political and social ideals of modern democracy, otherwise so consistently pursued on the other side of the Atlantic.

It is, nevertheless, certain that public spirit in America is everywhere on a higher democratic plane than in Great Britain, and, whatever the mistakes, the widespread nature of the effort to improve everything can only excite the warmest admiration of Europeans.

The fact most suggestive for everybody who visits the United States is the extraordinary interest the whole population, from highest to lowest, and richest to poorest, takes in education, not on the question of who is to be the governing body of the school or of who is to collect the money to be applied for its upkeep or what the particular denominational views on church government of the teachers may be, but on the question of how to turn out the most capable and adaptable young men and women and how to train the best teachers for this purpose. Everybody among the adult population of the country, born within it, is a politician, and the chief point in his political creed, whether he belongs to the one party or the other, is to obtain for the people the very best education which it is possible to procure. The sense of proportion which at one time was characteristic of the British people seems, in some mysterious way, to have migrated to the other side of the Atlantic. It is remarkable, on returning to this country, to observe that we seem to be doing nothing for its own sake and least of all in education.

Another point which strikes the British visitor to the United States, in connection with education, is the constant preoccupation of the American educationalist as to certain objects which are not usually considered in this country to be essential to education. Thus, every American teacher, primary as well as secondary, endeavours to infuse a current of good humour, of joy of life, into his or her pupils,—a joy of life which never forsakes them. This accounts for the bright, smiling faces one encounters everywhere amongst American children and native-born Americans. The American teacher especially never loses sight of the greatest object of all child-training, preparation for adult life, the development to its fullest possible extent of the child's moral and physical capacities. Just as the children are taught to hold themselves erect and get their full size out of what nature has given them, so it is with their

moral qualities. The influence of the teacher, moreover, extends to the homes of the children, and parent and teacher are in league to give the child every possibility of development. It would be absurd, of course, to say that this high tone is to be found everywhere throughout the United States, but it is the growing tendency everywhere. The acquisition of knowledge is becoming of less and less importance as compared with the development of character, health, and adaptability, and with the making of the handy man and handy woman who can turn themselves to anything. To train them to keep out of want is the end to which the teacher steadily applies himself, and educational subjects are selected and time is given to them in proportion to their value for this purpose.

In Great Britain progress in the same direction is noticeable in many of our educational centres, especially in Scotland. Of European countries, Germany, with her primary schools and her democratic university teaching, is at present running almost step for step with America. It is not without significance that these countries are the two which are supposed to be beating us in the commercial race.

THOMAS BARCLAY.

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